Cultural Tradition and Contemporary Thought in Iannis Xenakis's Vocal Works

Volume I: Thesis Text

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Abstract

Iannis Xenakis is a controversial figure in the history of music. His scientific background and the application of advanced mathematical theories to his compositions caused a lot of debate regarding the 'musicality' of these works. It is almost conventional for critics and musicians to overemphasise Xenakis's interest in algorithms and stochastic procedures as a means of composition. As a result of this approach, scholarly discussion has focused on his instrumental works that mostly carry a strong formalistic attitude, thus giving an incomplete picture of Xenakis.

The thesis examines Xenakis's vocal works, which have been under-researched despite the aesthetic value of this repertoire. The study identifies and discusses cultural and scientific parameters which influenced Xenakis in composing those works. With an overall review of his vocal oeuvre as departure point (chapter one), the thesis suggests a set of individual works for discussion, based either on classical or phonemic texts. In particular I examine a) the musical drama *Oresteia*, addressing the relationship between music and text (chapter two), b) socio-political and scientific considerations as applied in Xenakis's phonemic works (chapter three), c) the solo vocal works and the composer's relationship with performers (chapter four). The aim of the thesis is to counterbalance the prevalent scholarship concerning the mathematical dimensions of Xenakis's music and propose an interdisciplinary way of looking at his vocal music.

The present study concludes that Xenakis's vocal works attest to his preoccupation with cultural thinking and follow a different stylistic process from his instrumental works, which are more formalised and mathematically oriented. In each decade the vocal works are focused on a different writing and context and it becomes evident that Xenakis's vocal works draw upon his focus on particular cultural influences: literary texts, contexts, and ideas. Mathematics primarily serves the structural organization of the musical material, but it does not govern the final musical outcome.

to my beloved parents

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Author's Declaration

I declare that the work in this dissertation was carried out in accordance with the Regulations of the University of Bristol. The work is original except were indicated by special reference in the text and no part of the dissertation has been submitted for any other degree.

Any views expressed in the dissertation are those of the author and in no way represent those of the University of Bristol.

The dissertation has not been presented to any other University for examination either in the United Kingdom or overseas.

Signed.. 

Date.....16/05/2007.....

Contents

Chapter one: Review of the literature and overview of the vocal works

The Xenakis Literature

Some observations on the vocal works

Chapter Two: 'Born out of the holy bones of Greeks': *Oresteia*

Conception and history

Musical Examples (second volume)

Foreword

Objective of this thesis

The major part of Xenakis's oeuvre is instrumental music. He extensively used the sound of strings, for the continuity of glissando and the accomplishment of mass sonorities. He wrote only a few electroacoustic works, although it has been suggested by Solomos that even in this field Xenakis was a pioneer in terms of sound and scientific application along with Berio and Stockhausen.[1] It is surely unfortunate that he was not helped significantly by the development of the technology of his time. His computer music could have been far more advanced if Xenakis had witnessed the necessary scientific advancement earlier in his career. As with his electroacoustic music, Xenakis's vocal works also occupy a small percentage of his total oeuvre although at least three of Xenakis's vocal works, *Oresteia*, *Nuits* and *Cendrées* are considered today to be part of his canon, alongside the instrumental works. He wrote no operas and like many other contemporary composers, notably Boulez, Xenakis saw no validity in this genre.[2]

This dissertation concentrates on his vocal output with the aim to demonstrate the extent to which Xenakis applies socio-cultural elements, either when using Greek or phonemic texts, and discuss to a limited extent – but not dwell on – scientific issues, such as Brownian motion. It deals with the employment of various theoretical disciplines and musical techniques used by Xenakis to create his own musical theatre. The word 'theatre' will not be restricted to the staged works like *Oresteia*, but will embrace the phonemic and solo vocal pieces as well. The main concern will be to

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[1] Makis Solomos, 'Analysing the First Electroacoustic Music of Iannis Xenakis' *5th European Music Analysis Conference* (Bristol, April 2002). See also James Harley, 'The electroacoustic music of Iannis Xenakis' *Computer Music Journal* 26, no.1, 2002, 33-57.
[2] Bálint András Varga, *Conversations with Iannis Xenakis* (London: Faber & Faber 1996) 191.

illustrate different levels of expression as a means of dramaturgy and unusual vocality.

As will be seen in the following chapters, a significant consideration is that the ratio between mathematical thinking and Greek aesthetics is less equal in his vocal works than in his instrumental compositions. The latter, and especially the early works in the 1950s and 60s, carry a strong formalistic trait, which confirms Xenakis's striving for the application of mathematical concepts as a means of achieving his goals. It has, thus, become a habitual response to quote and discuss Xenakis's mathematical theories in order to understand his compositions, while we either ignore or underestimate other sources of inspiration. Ignoring or diminishing the value of other influential sources in relation to his compositions, music researchers have been mostly inclined to study the instrumental works, because in his non-vocal pieces the 'formalised' process is more obvious, although even here there is always a logical or a philosophical thesis.[3] With his vocal works, the reverse implications apply; there is a small degree of scientific function, while the cultural thinking is more straightforward. The significance of the thesis is twofold: first, as a contextual and analytical study of Xenakis's vocal works and second, as an attempt to counterbalance a common perception of the mathematical background of his thought as the sole intellectual stimulus regarding his music.

For this reason it is best to interpret Xenakis's vocal music in the light of his interest in two things: cultural tradition and contemporary thought. This is the context upon which this study will be based, looking closely at his musical theatre. The term 'cultural tradition' indicates the realm of historical discourse, which Xenakis was keen to use not as a mere return to the past but as a means of new thinking. For his vocal works, this context is located mainly in the world of classical Greece and also in the traditional Japanese theatre. Xenakis was a fervent admirer of the latter. He writes that *Noh*

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[3] Mario Bois, *Iannis Xenakis: The Man and His Music: A Conversation with the Composer and a Description of his Works* (London: Green Press, 1967) 14.

theatre has displayed an admirable cultural continuity (stemming from the 13th and 14th centuries) in the course of eight centuries and for this reason it is 'superior' to the modern version of the Greek theatre as a 'total experience'.[4] In contrast, witness the Greek tradition, which ceased existing when Greece was under Turkish occupation (a period of four hundred years). Although the term 'cultural tradition' given by the composer himself entails a broader perspective of human knowledge, here it is confined to the aesthetics of ancient practices from classical Greece to medieval Japan and also to socio-political concerns mirrored in Xenakis's vocal music. Additionally, the term 'contemporary thought' refers to the ways the composer treated subject matter from antiquity in his own individual way and also to the scientific aspect of some of his phonemic works. It should be pointed out that the cultural considerations are scattered throughout his entire oeuvre, but his vocal compositions are almost born out of them. What emerges from the vocal works is a conscious engagement with extra-musical references. These citations were used neither as a source of inspiration nor as (post-)modernist cross-reference; they were used to shape Xenakis's music.

Structure

The thesis will be divided into four chapters, excluding the introduction and the conclusion. The introduction outlines Xenakis's early years, his upbringing and educational background as a student in Greece and also his participation in communist parties as a resistance fighter during the Second World War. I discuss Xenakis's collaboration with the famous architect Le Corbusier and the influence he exercised on the composer. As we shall see Xenakis considered that music and architecture have interchangeable properties that he took into account as an artist. I will also look at Xenakis's first steps as a composer and his encounters with acclaimed musicians in

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[4] Iannis Xenakis *Essays on Music and Architecture*, selection of texts and musicological comments by Makis Solomos, trans. Tina Plita, (Athens: Psichogios Press, 2001) 27-28. The translation here is mine. (Ιάννης Ξενάκης, *Κείμενα περί Μουσικής και Αρχιτεκτονικής*, επιλογή κειμένων και μουσικολογική επιμέλεια Μάκης Σολωμός, μετάφραση Τίνα Πλυτά, Αθήνα: Ψυχογιός, 2001) 107.

Paris, providing some information about the musical movements of that time (serialism, aleatorism) and Xenakis's response to those systems. The discussion includes the influence of other composers on his music, such as Varèse and Bartók, and also the role of mathematics and ancient Greek literature as influentional sources that dominated in Xenakis's music.

In the first chapter, a discussion of articles and books relating to Xenakis's vocal compositions will be included, both for information and critical evaluation. The collection of the material will also include texts – other dissertations and views which are not coextensive with the present topic but give us an overview of Xenakis literature. Discussion will focus, in particular, on the analytical thrust of recent scholarship and whether there is a consensus or a diversity of approaches regarding Xenakis's oeuvre, how current studies differ from the standpoint of the current thesis, and also how key ideas and concepts have been understood and developed by other scholars. The aim of the literature review is to compare existing theories and hypotheses and to unpack terms used to describe Xenakis's vocal pieces in an analytical context. His vocal music will be looked at first through a brief introduction to the issues it invites and then through an attempt to identify and pin down its main characteristics. This chapter will also include an overview of the composer's instrumental works, since the main purpose of this section is to discuss the general context of Xenakis's output, and most importantly to examine to what extent the vocal pieces differ from or resemble his instrumental ones. As stated, Xenakis's instrumental works outnumber his vocal ones which employ a less formalistic thought. The discussion of this comparison will emphasise the reasons for differences between the string and vocal works. Why do instrumental works concentrate on stochastic and other mathematical procedures? Is this a deliberate intention or are there different purposes between vocal and instrumental works? The aim of this comparison is to challenge Xenakis's view that 'the human voice should not be treated in any special way'[5] based on stylistic and aesthetic analysis. The second, third, and fourth chapters will look at

[5] Varga, *Conversations*, 104.

individual works in the context of tradition and scientific thought which is the primary focus of the study.

Chapter two presents a case study of Xenakis's major drama *Oresteia* for mixed choir and ensemble. The important context here is the Aeschylean play itself and above all the role of chorus since it is also used by the composer to create a modern Greek drama, writing music that could resemble to an extent the ancient sound. After a philological account concerning the theatrical action of the play, three aspects will be discussed in relation to the music: the use of text as a source of sound, Xenakis's article 'Antiquity and Contemporary Music', and the composer's techniques in reassembling non-Western scales. The rhythm of the text, that is the prosody of the ancient words in *Oresteia*, is carefully followed and closely correlated with the modal character of the music. The discussion here includes the composer's interest in the classical spirit and his creation of an intense and unique dramatic context. Is Xenakis's essay indeed valuable to other composers interested in the reconstruction of ancient sound? How are ancient tetrachords coupled with modern sounds to create a sense of Greek drama? The choral singing is of particular importance here and it is investigated in relation to the choral passages in Aeschylus's play. As will be seen, what governs Xenakis's music regarding ancient plays is an interrelation of philological knowledge and musical research.

The third chapter discusses three of the most compelling phonemic works composed in the course of twelve years (1967-1979): *Nuits, Cendrées,* and *N'shima*. The first is for mixed choir *a cappella*, the second for mixed choir with orchestra, and the last for two female voices and ensemble. Here the main concern will be the political issues that influenced Xenakis's phonemic works and also the application of physics (Brownian motion) in relation to the last two works. An additional consideration will be the musical expression elicited by the phonemes and the strong instrumental idiom that Xenakis employs. He was not of course the first composer to utilise the human voice as an instrument, but we can easily sense that his vocal compositions are considerably different from other vocal works of this time.

As in the staged works, the words here are also used as a musical matrix, creating the same unrefined dramatic sound and resembling in style his instrumental music. Hence this chapter will discuss how social concerns are embedded in his musical argument, how instrumental techniques have been demonstrated in the vocal line and also how the theory of Brown is related to these works. Even though Xenakis's phonemic compositions are not based on a theatrical play, they nevertheless elicit a dramatic sense through musical gesture and physical power. The comparison with Artaud's 'theatre of cruelty' comes naturally into the discussion because of the aesthetic effects and rhetoric that both artists consciously deploy. There are interesting similarities between Artaud's and Xenakis's art which merit special attention, that is the use of dramatic dialectic, classical literature, gestures, oriental theatre, the idea of space, and most importantly the emotional intensity of words as sound material.

The fourth chapter deals with Xenakis's solo vocal works such as *Kassandra*, *Aïs*, *La Déesse Athéna*, and finally *Pour Maurice*. As these pieces were written for the baritone and friend of the composer Spyros Sakkas, I shall first look at the relationship of the two artists and second at the musical consequences of this exclusion and whether the artistic skills of the performer evoked a particular writing and style. The first three pieces are based on classical Greek texts, *Pour Maurice* on a phonemic text written by Xenakis. *Kassandra* – a later addition to the *Oresteia* – has an existence quite apart from the rest of trilogy in terms of musical style. Although it follows *Oresteia's* plot, after listening to the piece we are left with a picture corresponding to oriental sonorities and vocal timbre. *Kassandra* combines the bendings of the voice in the traditional Japanese drama and the tension of the Greek tragedy and Xenakis's interesting perspective on vocality. Thus concerning this piece, I shall discuss why the composer was interested in reconciling different epochs and civilisations and how this cross-cultural reference affects the singing in *Kassandra*. *Aïs* and *La Déesse Athéna* will be also looked at the context of the relationship between text, music, and singing based on the prosodic rhythm of the Greek language. With the

phonemic work *Pour Maurice* I shall discuss the notion of abstraction and discuss how Xenakis reaches abstraction through singing.

Plurality and Vocality

Xenakis's vocal music involves stylistic plurality and at the same time concentrates on a certain dramatic identity. As in his instrumental pieces, the vocal works carry the Xenakian stamp of force and cruelty derived from his personal experience in the Second World War. There is no dispute regarding originality in Xenakis's oeuvre, but in the end we have to tackle separately the question of novelty in his vocal pieces and make conclusive remarks regarding his musical theatre in all its dimensions. The most important potential of this dissertation is to prove Xenakis's direct attention to the musical result itself; suggesting that his mathematical methodologies were the aftermath of a philosophical engagement. The vocal compositions are also of importance in appreciating Xenakis's evolution over the course of fifty years. His instrumental writing entered a less formalised phase in the last twenty years of his creative life; some scholars even talk of postmodernism and neo-classicism.[6] With the vocal works, though, there is no such sharp stylistic distinction. Thus before concluding, I shall attempt to assess Xenakis's vocal oeuvre in terms of style and consider whether there is a development or unity.

The concepts of dramaturgy, vocality, and gesture will be recurring themes in the course of this study. As stated earlier, the first will be discussed in the context of musical theatre, but from a wide perspective. Xenakis did not write music theatre in the same fashion as Berio, Aperghis, or Henze in the sixties, nor did he ever write operas. The thrust will assemble elements which function as Xenakis's distinctive dramatic discourse in the context of his vocal works, such as text and texture, musical structure on a macro level, emotional experience, expression, and vocality. Moving away from the idea of drama in the strict meaning of the word or the idea of drama as a literal

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[6] Mihu Iliescu, 'Notes on the Late-Period Xenakis' in *Contemporary Music Review* 21, no.2-3 (2002): 133-142.

source alone, I shall assess how the text itself can challenge the sound *per se*. Especially in Xenakis's vocal works where both the Greek and the phonemic compositions were used purposely as incomprehensible texts, it is the music of words that is responsible for the final sound. The use of voice plays a decisive role in the projection of this material, being the locus of expression and the powerful side of the music. A focal point will be to look at the term 'vocality'.[7] This is a difficult term to pin down and it should be first distinguished from singing. Of course both terms are linked to production of the human voice, but 'singing' could be understood in a more limited context, while 'vocality' could be viewed as a more general and inclusive term. Hence, we could say that singing is a subcategory of vocality. The latter may have an abstract, intangible nature, without the implications of a meaningful text. It can denote the musical style of the singer and also the aura and the implications of his or her voice. As a concept it is very close to what Roland Barthes called 'The grain of the voice', but not necessarily ascribed to a particular performer. The concept of 'gesture' is related to the qualities of 'vocality' and also to other dramatic elements that the music evokes. Apart from the physical movements included in a musical performance and perceived as the gestures of the performers, the concept also emerges with a variety of functions. In the context of this work, I shall analyse the notion of 'gesture' which appears as an extension of the text, the voice, the action, the movements, the prosodic accents, the energy of the rhythm. Whether discussed in the staged works or in the phonemic ones, 'gesture' will be seen as a dynamic communication that comes out of the music and affects its overall shape. Expression and communication are the outcome of this interdependence and in Xenakis's music a consequence of his artistic objectives. Thus the message received is a fusion of classical aesthetics, political values and the composer's scientific background. In the end, whether it is *Kassandra's* rhetorical subjectivism or

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[7] There is no such entry in the *New Grove*, while in the Oxford Concise Dictionary 'vocality' is given only as a derivative noun of 'vocal' without further clarification. It is also absent as a term in the book of John Potter ed. *Cambridge Companion to Singing* (Cambridge: Cambridge University Press, 2000), but it is written in L.C. Dunn and N.A. Jones eds. *Embodied Voices: Representing Female Vocality in Western Culture - New Perspectives in Music History and Criticism*, (Great Britain: Cambridge University Press, 1994).

Nuits's universal lament, Xenakis's vocal music evokes a sense of humanism and a forceful beauty.

Introduction-Biographical Contexts

A Complex Artist

A study of the thought and music of Iannis Xenakis (1922-2001) is not an easy task. We are invited to get to grips with a significant thinker and also to face the difficulty of understanding his diverse thinking. The latter is both interesting and complex, fascinating and perplexing, rational and idealistic. The literature on Xenakis's life and works is not yet substantial, though there is certainly evidence of a growing scholarly engagement with his music and writings. For such a widely known personality, this is not surprising. Since his creativity involved a wide range of interests and his professional life a wide range of occupations, the scholar studying Xenakis needs also to deal with a wide range of interdisciplinary questions. His multiple references to architecture, mathematics, philosophy, and ancient civilizations, are unified under the quest for musical innovation. Xenakis's art enjoys a coherent heterogeneity, perhaps because he could not think in exclusive terms, musical or other. His music and his ideas about time and space spring from his long-term experience as an architect. His ideas were variously drawn upon to shape unprecedented music through the use of mathematics. Greek philosophy, Xenakis's permanent passion, runs through his entire oeuvre. All these fields and influences pose certain difficulties to those who wish to study his music. The title of his thesis defence, *Arts/Sciences: Alloys*, is very indicative of this necessary marriage of arts and sciences.[8]

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[8] Iannis Xenakis *Arts/Sciences: Alloys: The Thesis Defense of Xenakis*, trans. Sharon Kanach (New York: Pendragon, 1979). At Xenakis's thesis defence, which took place on May 18, 1976 at Sorbonne University, the committee consisted of people of different disciplines. The chair was Bernard Teyssèdre, professor of aesthetics and other members were Olivier Messiaen; Michael Ragon, professor of decorative arts; Olivier Revault d'Allones, professor of philosophy, University of Sorbonne; Michel Serres, philosopher, writer, essayist, and professor at the University of Sorbonne.

Xenakis's reputation as an artist is twofold; first, a man of mathematics and second, a radically innovative composer. Xenakis's complicated and scientifically–oriented musical thought created a microcosm of advanced mathematical theories with the aim of relating them to musical composition. Having used complex theories as compositional tools, Xenakis created a musical world far removed from the orthodoxies of the conservatoire and the avant-garde canon. His childhood, his thoughts, his education, his solitude, all these for Xenakis were sources of inspiration while composing music.

Upbringing and Youth

The best introduction to Xenakis's eventful life is his name itself. 'Xenakis' means 'little stranger'. He was a stranger, a foreigner, an outsider throughout both his personal and musical life. Braila, in Romania, was his birthplace town, where he lived for the first ten years of his life before he moved to Greece with his family. Xenakis's mother died when he was only five years old. Greece was his parents' native country and this is where Xenakis received his school and university education. Being from a prosperous social background, he was sent to a Greek-English boarding school in 1932 on the island of Spetses for his primary and secondary schooling. Eight years later, Xenakis was encouraged to take up civil engineering studies at the Athens Polytechnic.[9] It was right from the beginning of his life in Greece that the young Xenakis showed evidence of an unusual sensibility for knowledge and learning. In his own words:

> I spent my teenager years in a boarding school near the sea; my life, though, was a bitter one even in Spetses at that time. I loved reading astronomy very much, being isolated in a library. And at one point, a teacher of mine introduced me to

[9] The word 'polytechnic' should not be confused with the status of former Polytechnic Universities in the UK. In Greece, a Polytechnic University is a prestigious and highly competitive higher institution for engineering and architectural studies. The courses last at least five years and the students graduate with a diploma similar to a postgraduate degree. A similar institution is the École Polytechnique that Pierre Boulez planned to study also engineering although he never started his course. See *Pierre Boulez Conversations with Celestin Daliege* (London: Euluenburg Press, 1976) 10.

> Homer, to the ancient authors, who initiated my fascination with philosophical thought. When I came to Athens, I continued to study the ancient Greeks. I started reading Plato, ancient poets such as Sappho and Anakreon, on my own of course [...] I always carried a small book of Plato in my pocket [...] The situation in Greece was so suffocating one had to seek outlets. I created my own space, entirely imaginative, which was at odds with reality.[10]

This passage gives us a flash of insight into Xenakis's youth and implicitly into his later life as well. There are two things in particular that merit special attention from this quote: first, Xenakis's interaction with the ancient world from the early years of his life and second, his desire for isolation and escape from reality. These two elements, as this thesis will show, constitute the skeleton of Xenakis's musical philosophy: interaction and reaction.

Xenakis was politically active as a student. He was a member of E.A.M. (Ethniko Apelefterotiko Metopo), which was a left-wing National Liberal Front and also secretary of the University E.P.O.N. (Eniea Panelladiki Organosi Neon), the youth branch of EAM, in the year 1943-44. He was even condemned to death for his political stance. His death penalty was commuted in 1951 and when democracy was fully restored in Greece in 1974, Xenakis was allowed to return to his country after seventeen years of political exile. Most of his music was born out of his personal experience in fighting and demonstrating for democracy and freedom.

> I was in charge of a block of houses because I was a kind of officer. I had put the residents in the basement [...] and I organised defences, posting guards in position. Outside were the British troops with armaments [...] We heard mortars firing and there must have been an explosion which hit us [...] I fell unconscious. Ah [...] A catastrophe. My palate was pierced, there were bits of teeth, flesh, blood, holes, my jawbone was broken. My left eye had burst.[11]

Xenakis lost his left eye as a result of his involvement in resistance against the British troops in 1944.

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[10] Iannis Xenakis *Essays on Music and Architecture*, 27-28. The translation here is mine.
[11] Nouritza Matossian, *Xenakis*, (London: Kahn and Averill) 26.

Music and Architecture

In 1947, Xenakis decided to move outside Greece, hoping to embark on musical studies at the Paris conservatoire. He chose France because 'it was the first country with communists in the government' and also because he thought that France was the country closest to his way of thinking and behaviour, and that Paris was a kind of contemporary Athens.[12] While Xenakis was there, he wanted to study at the same time theoretical physics, ancient philosophy, and music.[13] Xenakis's first career steps in France comprise his collaboration with the internationally acclaimed architect Le Corbusier[14] whose ideas exercised a great influence on him. Xenakis was fortunate enough to meet and work for this distinguished personality first as a civil engineer and later on as an architect in Le Corbusier's team. Apart from the practical benefits that this collaboration offered to Xenakis in times of financial anxiety, there were also specific musical advantages. Having worked as an architect for twelve years, Xenakis developed a 'visualised' aspect of music in terms of space and sound. He sensed a close relationship between music and architecture and he cross-fertilised their properties with notions of 'form' and 'organisation' as his principal considerations. Space and time are two overlapping notions in Xenakis's music. In *Terretektorh*, for instance, the spatial dimension is realised during its performance, as the audience is free to move around and experience a different listening perspective. Space here is not independent from time as musical movements take place in both time and space. Xenakis's musical reflections on his architectural designs clearly show that music was always at the forefront of his thought. Almost all his compositions were initially written on millimeter graph paper, even those which he eventually rewrote using conventional notation. Using graphic notation Xenakis used to analyse also Bach's music in order to understand the structure of his works. Matossian notes that

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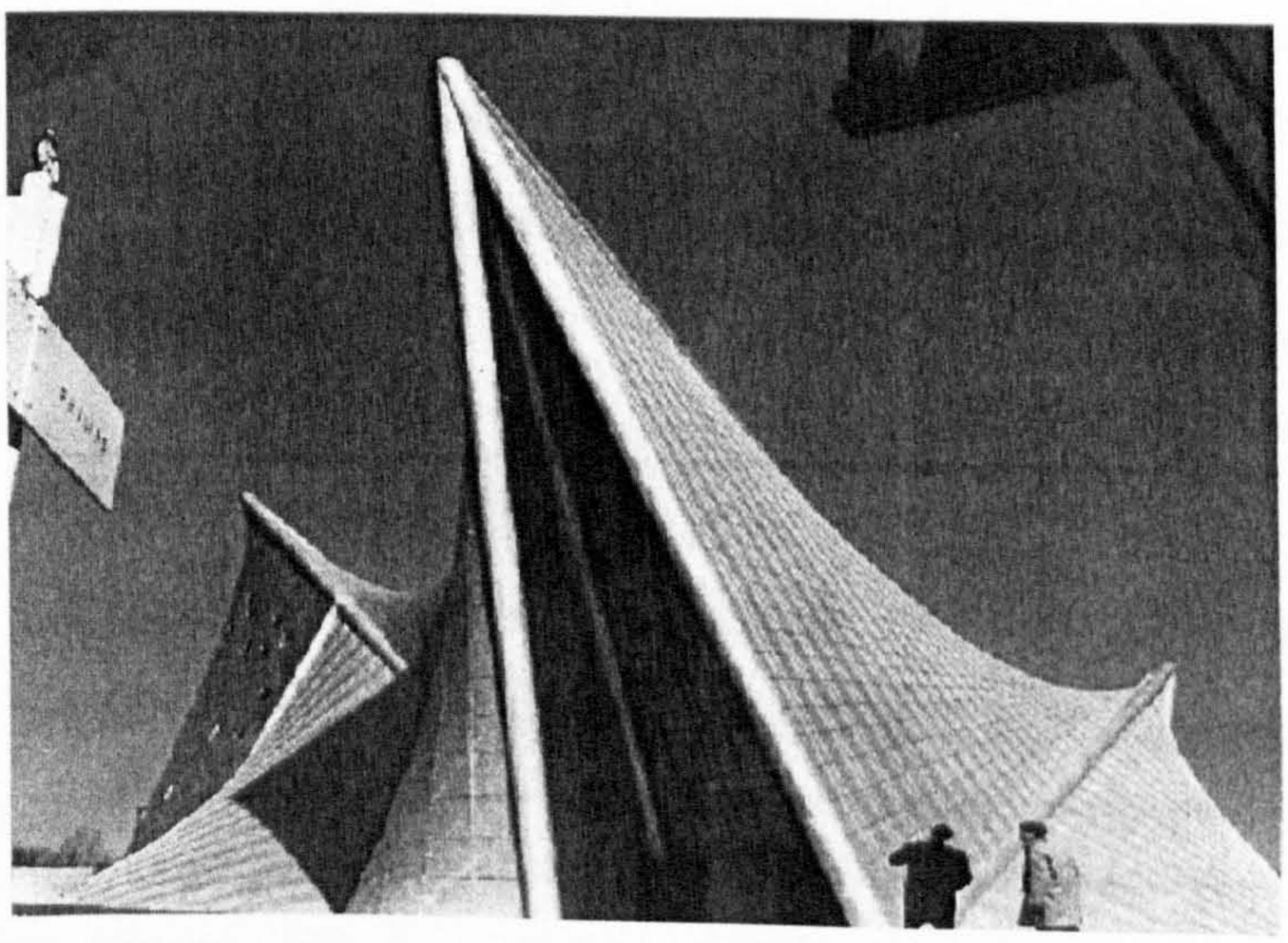
[12] Iannis Xenakis *Essays on Music and Architecture*, 30. See also Bois, *Iannis Xenakis*,8.
[13] Ibid.
[14] Le Corbusier (1887-1965) is regarded as one of the greatest architects of the twentieth century. He was born in Switzerland under the name Charles-Edouard Jeanneret, but he later decided to adopt his maternal grandfather's name as his artistic pseudonym.

'Xenakis always reverted to traditional notation, for sketching was only a preparatory stage providing images of some aspect of the formal and conceptual scheme, while the definition of the work in musical terms still remained to be completed.'[15] The 'musicality' of Xenakis's architectural designs is perhaps best expressed in the famous *Philips Pavilion* (1958) building designed for the international fair 'World Expo 58' in Brussel (see below for Xenakis's role in this). Previously, Xenakis worked as a project director for the monastery of *La Tourette* – a commision that Le Corbusier received in 1954 – for which he designed 'musical screens of glass' arranged on three levels, using the *Fibonacci* series and the Modulor system. This system was conceived by Le Corbusier to achieve universal proportions in his architectural forms. It is based on human measurements, the Golden Section, and the *Fibonacci* series.[16]

The structure of the Pavilion is based on a distinctively 'hyperbolic paraboloid' shape, an idea Xenakis first applied musically in his breakthrough *Metastasis* (1954). The Philips Pavilion no longer exists; it was destroyed after the end of the exhibition. Edgar Varèse composed the piece *Poème Électronique* as the main music performed in the Pavilion. Xenakis also contributed with an intermission piece called *Concret-PH*.



[15] Matossian, *Xenakis*, 61.
[16] See Varga, *Conversations*, 201.

In musical terms, this design represents the 'glissando' technique, an almost permanent characteristic of Xenakis's musical aesthetics. Similarly, his *Metastasis* represents the idea of massed sound in motion. The notion of the 'mass' was regarded by Le Corbusier in his book *Vers une Architecture* as one of the primary elements in architecture,[17] a proposal that must have influenced Xenakis's thought, although he never acknowledged it: 'I had never read any of Le Corbusier's books and he didn't talk about them. I just had an illumination! Isn't that possible?'[18]

Xenakis was a contributor to the plans of the *Philips Pavilion* and he claimed that Le Corbusier refused to acknowledge his contribution.[19] This was the chief reason, according to the composer, which pushed him to professional composition. Xenakis's initial enthusiasm for composition had, by then, ripened into a life-long passion, but he also maintained his interest in architecture. In 1965, almost seven years after his disagreement with Le Corbusier, Xenakis wrote the book *L'Urbanisme, Utopies et Réalités* that includes the article *La ville cosmique*. Several years later he published the book *Musique - Architecture* (1971) and he also remained active as a free-lance architect.[20] As Xenakis said in his interview with Bois, he continued part-time studies in architecture for his own satisfaction, doing also work for an engineer to earn his living. Xenakis designed the villa of François-Bernard Mâche on the Greek island of Amorgos in 1966 and in 1984 he entered an architectural contest for the Cité de la Musique project at the Parc de la Villette, designing a non-conventional concert hall in oval shape with the architect Jean-Luis Veret. The project was short-listed but not the winner. The potential that music and architecture can bridge the gap between art and science fascinated Xenakis, who used mathematics as the unified means.

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[17] The other elements that Le Corbusier considered as important to architecture are 'surface', 'plan' and 'regulating time'. See Matossian, *Xenakis*, 56.
[18] Matossian, *Xenakis*, 58.
[19] As the composer recalls, it was only later that Le Corbusier admitted that the Philips Pavilion was Xenakis's design. Varga, *Conversations*, 24.
[20] Bois, *Iannis Xenakis: The Man and his Music*, 6.

Encounters with the Academy

Xenakis was already in his late twenties when he sought formal and traditional training in harmony and counterpoint. According to the composer, the reaction he was receiving from composers at the Paris Conservatoire was standard: 'You are too old, my child. Why don't you work as an engineer or even as an architect? Make money first and then, when you are around forty, do whatever you like.'[21] Among his first teachers were also Arthur Honegger and Darius Milhaud. The composer decided to abandon the conservatoire when Honegger disavowed Xenakis's compositions on the basis of fifth and octave parallels! Nadia Boulanger and Oliver Messiaen were perhaps the only exceptions who encouraged him to take up composition. In his interview with Varga, Xenakis mentions that Messiaen offered him delightful advice when they first met in 1949,[22] suggesting that he did not need to study music in the traditional way, but instead to remain naive. Messiaen wanted him, as Xenakis explains it, to stay uninfluenced and open-minded.[23] It was these simple words that encouraged Xenakis to treat music in the light of his own experience. Apart from Boulanger's and Messiaen's support Xenakis was greatly helped by another significant devotee and defender of contemporary music, the German conductor Hermann Scherchen (1891-1966), a 'self-taught phenomenon' as Boulez describes him, whom Xenakis met in 1954. He had premiered major works of contemporary composers of his time such as Schoenberg's *Pierrot Lunaire*, Webern's *Variations for Orchestra op.30* and Varèse's *Déserts*.[24] Scherchen become instantly interested in conducting Xenakis's *Metastasis*, written for an orchestra of sixty musicians. Matossian's book records that Scherchen was amazed by the

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[21] Iannis Xenakis *Essays on Music and Architecture*, 30.

[22] It was Le Corbusier who introduced Messiaen to Xenakis. Matossian writes that the French composer was greatly impressed by Xenakis's 'glorious wounds' and also his intelligence. See *Xenakis*, 48.

[23] Varga, *Conversations*, 31.

[24] Boulez writes that Scherchen was 'both adventurous and patriarchal in character [...] a powerful image with no hint of cruelty in it.' In Pierre Boulez's, *Orientations* (London: Faber & Faber, 1985) 499.

opening passage and asked Xenakis how on earth he had thought of it.[25] From now on Xenakis had something to look forward to. It is hard to imagine what would have happened, without Scherchen's support for his music. With the conductor's help two other major works of Xenakis were premièred in the next few years. They were *Pithoprakta* for an orchestra of forty–nine musicians in 1957 and *Achorripsis* for an ensemble of twenty–one musicians in 1959. In the meantime he had already embarked on music research at Pierre Schaeffer's (1910-1995)[26] electronic studio, where he worked from 1957 until 1962 and produced *Analogique B* (1958-9), his best-known tape composition of this period.

Xenakis was awarded and accepted a Ford Foundation residence in Germany (1964-5) where he could work free from any financial concerns. The grant in question was given to artists of international status with the hope that they would work and reside in Berlin.[27] But despite ideal working conditions at last, Xenakis was soon extremely lonely with his family left in France.[28] In 1966 a new invitation arrived for the composer, this time outside Europe. He was asked to teach at the University of Indiana in Bloomington where Xenakis became the director of the *Centre d'Etudes Mathématiques et Automatique Musicales* (CEMAMu), a similar institute to the EMAMu (*Equipe de Mathématique et Automatique Musicales*) that he founded in Paris in 1966. In both cases, the idea behind these institutions was that composers could transfer scientific thought into music.[29] At the CEMAMu Xenakis came up with the idea of UPIC (*Unite Polyagogique Informatique* du CEMAMu), a computer system allowed composers to produce music as they draw upon a board with an electromagnetic pen. Their graphic representation would be translated into sounds. This system was used for educational purposes for children aged 5 and 6 years old. *La*

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[25] Matossian, *Xenakis*, 78.
[26] Pierre Schaeffer (1910-1995) was a sound-engineer, composer, novelist and radio broadcaster. He did extensive research on music technology and his name is associated with *Musique Concrète* in late 40s. This new art, predecessor of electroacoustic music, used tape-recorded sounds instead of traditional instruments.
[27] See Matossian, *Xenakis,* 167.
[28] Ibid, 169. While in Germany Xenakis composed *Eonta*, a sextet for piano and brass quintet.
[29] Matossian, *Xenakis*, 118.

Légende d'Eer (1977) and *Mycenae-Alpha* (1978) are perhaps the most important works composed at the CEMAMu by Xenakis. His position in Bloomington offered Xenakis some money, but not the working environment he was looking for. He claimed that the teaching staff proved to be too conservative for his interests[30] and thus after spending six years in America, Xenakis returned to France where he lived for the rest of his life. But caught between his Greek roots and his French citizenship (received in 1965), Xenakis never felt comfortable with either of these identities. As Françoise Xenakis has written, her husband never felt Greek among the Greeks or French among the French.[31]

Serialism

Two routes are necessary for the appreciation and interpretation of Xenakis's music: first, we may look at the musical scene after the war, and second, consider Xenakis's own musical thinking and aesthetic objectives in relation to this context. Both aspects are crucial if we wish to define and evaluate the composer's intentions and achievements. The fact that Xenakis lived and worked as a young composer at the serialism's dominance might seem self-evidently to raise the question of his relation to serial thinking and his own concerns regarding this method. One would probably expect that since Xenakis was a latecomer as a composer, he would have thought of following the serial method as a path to acceptance. However, the fact that he never received systematically the traditional conservatoire training in composition more likely accounts for his reaction against an already established 'school', although serialism could have been for him a 'ready path' to start his career off.

When *Metastasis* was performed in 1955, serial composition had moved into its 'total' or 'integral' phase. From the thematic serialism of Schoenberg and the motivic music of Webern, serial music offered new

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[30] Varga, *Conversations,* 45.
[31] Françoise Xenakis, 'Ce que je sais de lui' in *Portraits de Iannis Xenakis* (Paris: Bibliothèque Nationale de France, 2001) 11.

possibilities in controlling parameters other than pitch such as duration, volume, and timbre. Music was subjected to an increasingly complex method, leading to a strictly procedural, mathematical writing. Total serialism soon became a victim of its own strict laws of succession and self-affirmation, in the absence of the composer's personal experience. Berio rightly commented on this in 1956, saying 'It is disconcerting to see how the possibility of writing music without being personally involved [...] has already become part of the ''history of music''.[32]

Integral serialism was employed by many composers in a variety of ways, mainly inspired and influenced by the music of Webern and Messiaen. The latter, especially with his piece *Mode de Valeurs et d'Intensités* (1949), pursued the possibility of advancing the role of other parameters in the serial process. His piece become the basis on which other composers built. The music of Boulez, Stockhausen, Babbitt and Nono provides us with characteristic examples of 'total serialism' with Boulez's *Structures I* (1951) and Stockhausen's *Gesang der Jünglinge* for tape (1955–6) at the forefront of absolute serialism in the 1950s. Predetermined shock effects of dynamics and timbre were typical of this kind of music that imposed difficulties on both listeners and performers.[33]

While the serial movement was at its peak, Xenakis diagnosed a collective crisis in this method, denying and criticising the fundamental principles behind it. His response came in two forms, a musical and a written one. *Metastasis* was his first surprising work in terms of conception and a reply to serialism. Xenakis did use serial ideas in this work, but to a very limited extent. Peter Hoffmann writes:

For the composition of the middle section of *Metastaseis* Xenakis developed a highly idiosyncratic dodecaphonic technique. In his space-time concept, the

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[32] Reginald Smith-Bridle, *The New Music: The Avant-Garde since 1945* (Oxford: Oxford University Press, 1987) 41. A similar comment was made by Boulez regarding *Structures*. He said that he wrote down all the transpositions as though it were a mechanical object, while he was having a limited role to the selection of registers. See Boulez, *Conversation with Daliege*, 55.

[33] One of the characteristic difficulties in total serialism is when many voices have to respond at the same time to quick dynamic alterations.

> pitches are associated with 'differential' durations from the Fibonacci series. Pitch manipulation within 12-tone rows is determined by the systematic use of mathematical permutations of row segments; the transposition of rows through rotation; and the concept of the 'diastematic series' based on the six interval classes rather than the 12 pitch classes.[34]

For this reason Xenakis was accused of 'impurity' by the serialist composers. Despite its 'impurity', the piece instantly stood out as a predominantly different and *anti-serial* composition because of its unusual glissandi and its large sonic masses, which provoked and shocked all the fervent serialists. It was premiered in Donaueschingen at the festival of new music under the direction of Hans Rosbaud. The chairman of this festival was Antoine Goléa who commented that 'every year there is a scandal at the festival and this time a young Greek brought a piece crammed with glissandos.'[35] Xenakis, then in his early thirties, was still unknown and viewed as a scandalous heretic. However, it was not so much the premiere of *Metastasis* that made him famous, but the article 'La Crise de la Musique Sérielle' (The Crisis of Serial Music) that Xenakis wrote in 1955.[36] This article is perhaps the most famous of the composer's essays. Even now it is a reference point for someone who wishes to know Xenakis's theoretical response to the principles of the serial movement.

'The Crisis of Serial Music' is a short but pithy essay: economy in size, was a permanent characteristic of both Xenakis's writings and his music. The essay consists of two main parts, clearly divided. In the first part the composer outlines the chief concerns of serialism – the 'material', as he writes – established by Schoenberg, Berg and Webern. He identifies serial characteristics and describes them in his own way. The main points Xenakis makes are: first, although serial music attempts to bring together the three parameters of sound, that is frequency, timbre and volume, only the first one dominates at the expense of the other two; second, duration is less

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[34] Peter Hoffmann 'Xenakis Iannis' *Grove Music Online* ed. L.Macy (Accessed 22 October, 2006).
[35] See Varga, *Conversations,* 35.
[36] The article was published in the Swiss periodical *Gravesaner Blätter* No.1. Here, I have looked at the Greek translation of the text as appeared in the book *Essays on Music and Architecture,* 53-57. Matossian has also translated into English the most important parts of this article in her book *Xenakis*, 84-86.

organised, put in a more traditional context, frequency again playing the organisational role; third, he proposes that Renaissance linear polyphony provides the frame upon which form is developed. Xenakis also recognises that Messiaen's contribution is significant in advancing the role of rhythm and also in introducing the equal use of all parameters in a serial composition. He rushes, though, to emphasise that Messiaen's development has undermined the evolution of serialism and consequently composers have reached an artistic impasse.

In the second part of the essay Xenakis expresses major reservations regarding two things: a) the finite number of objects available due to the well-tempered piano with its twelve notes; and b) the linear polyphony, that because of its profound complexity results in music which is a chaotic, random sound. At this point, Xenakis introduces the theory of probability which, according to him, is able to go beyond the 'linear category of musical thought'. However, even if mathematics served as a solution to the perceived chaos resulting from profound complex structures, the quasi-polyphonic technique of 'arborescences' (tree-shape structures resulting from the same root), that Xenakis introduced in the sixties, challenges his argument regarding serial polyphony. Further to this, his critique that the complexity of the resulting sound does not reveal the serial combination of the voices is sometimes also applicable to his own music. The production of scales through the theory of *sieves*, for instance, reflects the same problem between process and audibility. Similarly, the pitch sets in *Herma* derived from complex logical operations (symbolic music) are not always perceptible to the listener. Regarding the issue of perceptibility in his music Xenakis states:

> In fact, the data [upon which the structural details are based] will appear aleatory only at the first hearing. Then, during successive rehearings the relations between the events of the sample ordained by 'chance' will form a network, which will take on a definite meaning in the mind of the listener, and will initiate a special 'logic', a new cohesion capable of satisfying his intellect as well as his aesthetic sense; that is, if the artist has a certain flair.[37]

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[37] Iannis Xenakis, *Formalised Music: Thought and Mathematics in Composition* (Bloomington: Indiana University Press, 1992) 37.

In this passage Xenakis appears to share the responsibility between the listener and the composer. Although he is relatively specific about what listeners need to do in order to identify the structural details of stochastic music, he is rather ambiguous when it comes to the role of the artist. What does 'flair' mean for Xenakis and how can it be used to make his music perceptibly more meaningful? The fundamental difference between the two systems – serial and stochastic – lies in the organisation of the musical material and the composer's control over various aspects of sounds (i.e. pitch, timbre), either with the use of the series or with the use of probabilities. It may seem that serial thinking, even integral serialism, was not challenging enough for Xenakis's mind, used to analysing sophisticated engineering problems, and thus this method received unreserved rejection from him. But was Xenakis more interested in putting forward his own musical aesthetics than criticising serial music? His essay 'The Crisis of Serial Music' gave him the opportunity to justify his own aesthetic theories, to explain why and how he breaks out of the traditional system, and also to encourage other composers who wished to overcome the limits of serial method and use alternative paths incorporating mathematics. As Xenakis characteristically writes: 'this article served as a bridge to my introduction of mathematics in music.'[38] His critique of serial music is not supported by explicit musical examples, in contrast to a similar critique written by Ligeti in the sixties, who condemned the serial music of Boulez and Stockhausen citing specific examples.[39] Xenakis only acknowledges works by Messiaen and Varèse (the two composers who supported him at the beginning of his career), such as *Mode de valuers et d'intesités*, *Île de feu*, *Intégrales*, *Ionisation*, and *Déserts*, without providing any musical analysis for the music or the composers he denounces and without paying his respect to particular serial compositions (such as *Le marteau sans maître*), which could – despite their method – command admiration from a musical point

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[38] Xenakis, *Formalised Music*, 8.
[39] Paul Griffiths, *Modern Music and After: Directions since 1945* (Oxford: Oxford University Press, 1995) 135.

of view. Xenakis's intention was clear; he wanted to attack serialism as a method in order to open the way for his own system.

Aleatoricism

While serialism prevailed, more and more composers were confronted with a different perspective on musical composition, that of chance and aleatoricism. Aleatoric music dwells on the idea that a composer has a certain responsibility for the final result of a musical work. This result depends in part on actions of the performer. It is worth mentioning Paul Griffiths' claim that 'the permutational nature of serial composition was one cause of the introduction of aleatory forms, allowing the performer(s) to permute passages of composed music.'[40] The idea that interpreters could affect the composer's material in the course of a performance was not a recent one,[41] although it was only in the first decades of the twentieth century that composers started making consciously extensive use of indeterminate musical material. But once again, Xenakis firmly expressed his disapproval, this time for so-called 'chance music'. He believed that aleatoric music was a reaction to his article 'The Crisis of Serial Music' and a counter-proposal to the theory of probabilities introduced by him.[42] Of course, examples of aleatoric music exist before the publication of Xenakis's article in 1955. Cage's *Music of Changes*, for instance, was written four years earlier. By saying that chance music was a reaction to his article, Xenakis might have meant that total serialism become less and less popular in favour of aleatoric music. He claimed that serialist composers pretended not to notice his article, but in fact they were furious about its content.[43] He also believed that aleatoric music was a consequence of the fact that their music had reached an impasse. However, for Xenakis the final outcome was inadequately scientific, confusing the principles of 'chance'

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[40] Paul Griffiths 'Aleatory' *Grove Music Online* ed. L. Macy (Accessed 21 October, 2006).
[41] In the classical era, for instance, the improvisational embellishments and cadenzas of the piano concerto is perhaps the most familiar example of music determined by the performer.
[42] Varga, *Conversations,* 54-55.
[43] Ibid., 54. Xenakis does not name particular composers in the interview who become annoyed by his article.

and 'probability' with that of 'improvisation.'[44] He did recognise that the musical philosophy of John Cage, for instance, was interesting in its own way, but he was neither convinced nor attracted by the idea that a musical work can become a shared object between composer and performer.

> Cage's music can be interesting, until he relies too heavily on the interpreters, on improvisation. That's why I've kept aloof from his trend. In my opinion it is the composer's privilege to determine his works, down to the minutest detail. Otherwise he ought to share the copyright with the performers.[45]

Although Xenakis uses the word 'privilege' when a piece of music is realised exclusively by the composer's expectations, any emotional, intellectual and technical aspect of a composition could be better understood as the aesthetics of his or her own personal approach. We would say that this view would also apply to those who would try to analyse a musical work on a theoretical level – that is scholars and musicologists. Their findings and analyses, no matter how correct, can only be indicative of the composer's conscious thinking to a certain extent. For Xenakis the relationship between the artist and his or her work seems to be a private reflection, a subjective awareness of its function and ideological principles. But, in the end, how distant is Xenakis's music from the notion of 'chance'?

In his article 'Xenakis and the Performer', the pianist Peter Hill writes about the process of decision-making required from the player in Xenakis's piano works *Herma* and *Evryali.* He remarks that, in both compositions, the performer needs to make his or her own decisions at specific moments where 'it is impossible to cover all the notes at the required speed'. Therefore, performers should decide how they can best serve the music in terms of interpretation when it is impossible for them to play the notes as they are actually written.[46]

> [...] each performance will become an attempt at an ideal but unrealizeable perfection. The musician is therefore like an athlete who, in terms of measured achievement, can only aim for improvement, not at some objective goal [...]

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[44] Ibid., 54-55.
[45] Varga, *Conversations*, 56
[46] For a discussion regarding performance issues in Xenakis's music, see chapter four.

> The central section of *Evryali* further illustrates the process of decision-making on the basis of 'accuracy priorities'.[47]

Peter Hill's statement suggests that there is a discrepancy between Xenakis's view that it is the composer's privilege to determine his works down to the minutest detail, and the actual physical realisation of the composer's intention by the performer. In the same interview with Varga, Xenakis himself contradicts his belief in the composer's absolute control in a statement regarding the performance of *Synaphaï*, saying that 'it's up to the soloist to play all the notes or leave some out.'[48] His critique of aleatoricism, as in the case of serialism, is once again Xenakis's defense of probabilities ('Chance needs to be calculated'[49]). But as Harley rightly points out 'Xenakis has pragmatically employed limited degrees of chance in certain notes, where various kinds of graphic notation are used to convey textures or effects that need not be precisely notated.'[50] There are also other instances where performers are openly required by Xenakis to determine the character of the music. The sibilant sounds in *Nuits*, the 'noise stochastiques' in *Oresteia* emphasise the role of the performer in the musical process. Towards the end of his creative life, Xenakis seemed to be more relaxed concerning the role of the performer in his music. In his final orchestral piece *Sea-Change* (1997), no metronome indications are given, while in *O-Mega* (1997) – Xenakis's last composition – the choice of percussion instruments is left to the performer. Additionally, in *Rebonds* (1988) and *Mosaïques* (1993) the form is mobile resembling works by Cage and Stockhausen, as the performer is free to choose the order of the movements.

Influences – Varèse and Bartók

It would be inaccurate to claim that Xenakis's stance as a composer was only a reaction against the musical culture of his time. Although he objected assertively to both serialism and aleatoricism, Xenakis acknowledged merit

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[47] Peter Hill, 'Xenakis and the Performer', *Tempo* 112, (1975) 19.
[48] Varga, *Conversations with Xenakis*, 65.
[49] Xenakis, *Formalised Music*, 38.
[50] James Harley, *Xenakis: His life in music* (New York and London: Routledge, 2004) 25.

in both methods as enrichment opportunities that would enhance the scope of contemporary music. In an interview on Canadian radio in 1993, Xenakis admitted that 'the change of approach that serial music introduced was very important in the mind of the composers.'[51] Further to this view, we notice the principles of the Second Viennese school remained unthreatened for decades and Xenakis used to believe that musicians should take drastic steps and become more radical, more resistant to old material and ideas. For him all these hopes lay outside the sphere of serialism and aleatoricism and for this reason Xenakis felt instantly attracted to the music of another immigrant composer, Edgard Varèse,[52] first mentioned to him by Messiaen and Le Corbusier.[53] He showed an immense interest in Varèse's music, which seemed to diverge from the ideas and practices in Europe at that time.

Varèse's musical investment was in the quality and exploration of sound *per se*. His aim was to dislodge traditional musical thinking about sound and seek new instruments in order to achieve this. Like Xenakis, Varèse wished to enclose music in a completely new aesthetic context. 'I refuse to submit myself only to sounds that have already been heard' he said in one of his first interviews in New York in 1916.[54] Likewise, Xenakis used to say that he could not repeat something that had already been done. Varèse's 'organised sound'[55] was a revolution for the Western ear; indeed both composers seemed to feature a major departure from the music of the past. Their main focus was the abolition of the tempered system and the conventional use of melody and harmony, and most importantly their quest for a new timbre.[56] The latter was accomplished by both Varèse and Xenakis, but conceived in different ways. Varèse invested enthusiastically in the idea of new instruments as a means of sound transformation. He was convinced that the demand for essential difference in the quality of sound

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[51] James Harley, 'Iannis Xenakis in Conversation' *Contemporary Music Review* 21, no.2-3 (2002): 18.
[52] Varèse moved voluntary to the States in 1915 as his music was misunderstood in France.
[53] Varga, *Conversations*, 57.
[54] Fernard Ouellette, *Edgard Varèse* trans. Derek Coltman (London: Calder & Boyars, 1973) 46.
[55] A term coined by Varèse to describe his own music.
[56] Varèse said that 'the tone entities are dead, because they are empty of sonal energy' Ouellette, *Varèse*, 45.

could only be met with new media. 'I long for instruments obedient to my thought and whim, with their contribution of a whole new world of unsuspected sounds, which will lend themselves to the exigencies of my inner rhythm.'[57] For this reason he favoured electrical instruments and the urban sounds of everyday life that New York provided him. Varèse believed that only technology would grant musicians the sonic revolution they needed. Xenakis was greatly impressed by Varèse in terms of sound perception and ideas, but sought a revised sound production achieved with conventional orchestral instruments. 'Traditional instruments still offer plenty of scope, whatever Varèse may have said in the 1950s' declared Xenakis, whose choices of media confirmed this conviction.[58] He wrote extensively for string instruments, which occupied a central place in his repertoire, and used them as a means to new possibilities involving alternative ways of writing for them. Although Xenakis did engage with electroacoustic music, string compositions remained firmly at the foreground of his personal experimentation. At the same time, the music of Ligeti and Penderecki expresses similar preoccupations with Xenakis's music as regards the use of glissandi, orchestral clusters and graphic notation.

Further to Varèse's music, the glissando technique that Xenakis used even in his vocal works is a Bartókian influence. Without overemphasising a parallel between Bartók and Xenakis, it would be plausible to suggest that the latter must have been influenced by the string music of the former, especially when it comes to techniques such as glissando and *sul ponticello*.[59]

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[57] Herbert Russcol, *The Liberation of Sound: An Introduction to Electronic Music* (Englewood Cliffs, N.J., Prentice-Hall, 1972) 43.
[58] Varga, *Conversations,* 196.
[59] Makis Solomos discusses the influence of Bartók on Xenakis. See 'Xenakis' early works: from "Bartókian project" to "Abstraction".' *Contemporary Music Review* 21, no.2-3 (2002).

In *Cendrées* Xenakis indicates the use of 'sul ponticello'[60] for the production of specific, glassy sounds. In Bartók's string quartets. the composer also indicates glissandi played 'sul ponticello'. The use of 'sul ponticello' does not introduce new instrumental techniques in *Cendrées*, but its sound is certainly related to the siren effect that often characterises Xenakis's music. The application of such techniques in Bartók's instrumental music contributes to the overall shape (form) and also colour.[61] It is possible that apart from the use of folk material and the concept of 'abstractness', the music of the Hungarian composer was a source of inspiration for Xenakis on a more general level. As François-Bernand Mâche[62] writes, 'the young composer [Xenakis] had the ambition to be for Greece what Bartók was for Hungary.'[63]

In summary, serialists did not convince Xenakis, who believed that their ideas seemed to dismiss compositional problems. Additionally, aleatoric music was seen by the composer as a pseudo-scientific approach to the notion of chance. Varèse's electroacoustic music opened the way for an advanced treatment of sound *per se,* but he excluded Xenakis's favoured string ensembles from his oeuvre and he also did not use 'pre-established compositions and all forms of structure'.[64] Bartók's influence was evident to a certain extent, but Xenakis did not follow the folk path that the Hungarian composer was interested in. In the end Xenakis embraced a new theoretical path with the aid of mathematics.

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[60] Paul Zukofsky writes that the techniques pizzicato or playing close to the bridge (sul ponticello) dates back to Monteverdi's and Haydn's music. However, in the twentieth century the demands of the same specifications upon the performers are greater and the problem may be how brief the durations are between changes from one type of right-arm use to another (i.e Luigi Nono, *Varianti* 1957). See 'Aspects of Contemporary Technique' in *Cambridge Companion of Violin*, Robin Stowell (ed.), (Cambridge: Cambridge University Press, 1993) 143-147.

[61] Amanda Bayley 'The Strings Quartets and Works for Strings Chamber Orchestra', in *The Cambridge Companion to Bártok* ed. Amanda Bayley (Cambridge: Cambridge University Press, 2001), pp. 163 and 167. Bártok also used quarter-tone glissandi, Xenakis's favourite sound.

[62] French composer and classicist born in 1935. In 2002, Mâche become the Chair of the Academie des Beaux-Arts, a post occupied by Xenakis until then. He was also editor of a recently book on Xenakis *Portrait(s) de Iannis Xenakis* published by the Bibliothèque Nationale de France (2001).

[63] Makis Solomos, 'Xenakis's early works' in *Contemporary Music Review* 21, no.2-3 (2002): 22.

[64] Bois, *Iannis Xenakis: The Man and his Music,* 21.

The challenge of mathematics

Xenakis not only felt the need to provide to other composers a convincing assessment of the musical movements of his time, but also suggest how they could make a complete escape from current tendencies. This was his predominant aim: to base his music on a new theory totally distanced from those of other composers. The first step towards this was to indicate clearly the compositional problems which serialism, for instance, tackled insufficiently. The concept of 'continuity-discontinuity' was considered by Xenakis a central element in musical composition that serialists left out of account.[65] By this he meant the changes in timbre and frequency in particular. This aspect was of particular significance for Xenakis; the massive glissandi in *Metastasis* were the musical solution to the continuous transformation he was aiming at. He also thought that serial music relied much on pitch with an inevitable static effect, which in the end proved an unattractively complex process.

> I became more and more interested in the idea of continuous and discontinuous change. In *Metastasis* the former is represented by glissandos, the latter by the permutation of intervals and also the organisation of time based on the golden section [...] I had to control so many events at the same time that I realised that only probabilities could help.[66]

Thus Xenakis made new music out of the universal language of mathematics. Probability theory was used in an attempt to generate and control musical parameters of large-scale transformations. The theory is 'concerned with mathematical analysis of the intuitive notion of 'chance' or ''randomness''.'[67] It dates back at least four centuries, emerging from gambling games. Today it has applications to almost every area of life, from philosophy and psychology to genetics and engineering. Mathematical statistics are an important branch of this theory, especially for economics and social issues. Although there is a consensus regarding the mathematical aspect of probability theory, scholars have provided different interpretations

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[65] Varga, *Conversations*, 76.
[66] Ibid., 72-73.
[67] Michael Loève, *Probability Theory I* (New York: Springer-Verlag, 1977) 1.

of its philosophical perspectives.[68] Xenakis was not interested in treating musical events as isolated points in the fashion of serial composition, but concerned with the idea of sound masses (clouds or galaxies as he used to say) whose behaviour could be determined as a whole and not as independent points. In the light of these thoughts, Xenakis coined the term 'stochastic music'[69], music whose main characteristics would be the equivalent of natural phenomena, such as the effect of hail on a hard surface. Stochastic music is mainly based on the theory of probability that he used in order to create macroscopic events through deterministic procedures. This idea of a 'mass' sound is, to an extent, the musical corollary of Xenakis's wartime experience that is closely related to massive demonstrations and the effect of a huge crowd protesting. He writes:

> Everyone has observed the sonic phenomena of a political crowd of dozens or hundreds of thousands of people [...] It is an event of great power and beauty in its ferocity [...] The perfect rhythm of the last slogan breaks up in a huge cluster of chaotic shouts [...]The statistical laws of these events, separated from their political or moral context, are the same as those of the cicadas or the rain. They are laws of the passage from complete order to total disorder in a continuous or explosive manner.[70]

The manipulation of mass sound events was achieved by the theory of probability and also with the application of the 'kinetic gas theory'.[71] The ultimate goal for Xenakis was to achieve a different model of 'form', one free from the rules of tonal or serial practices. The chief feature of his music, labelled under the term 'stochastic music', draws essential elements from the composer's experience in military-occupied Greece and nature.

Xenakis made use of several mathematical theories, which helped him to explore and define the element of sound in the best possible way. Apart from the laws of probability, Xenakis also used Markov Chains for *Analogiques*, Game Theory for *Duel* and *Strategie*, Group Theory for

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[68] See Donald Gillies, *Philosophical Theories of Probabilities* (London and New York: Routledge, 2000).
[69] 'Stochastic' is derived from the Greek word 'stochos', meaning, target.
[70] Xenakis, *Formalized Music*, 9.
[71] The 'kinetic theory of gases' (1859) was developed initially by James Clerk Maxwell and Ludwig Boltzmann and explains the correlation between temperature and pressure in terms of a statistical model of the individual and collective motion of gas molecules.

Nomos Alpha and Set Theory for *Herma*. In general, all his compositions have to a large or small extent some mathematical implications depending on the composer's aesthetic goal. It is not the intention of the thesis to discuss here his mathematical theories; the only exception is the discussion of Brownian motion related to two of his vocal works and it will be discussed in chapter three. Sure enough, Brownian motion is not the only mathematical theory that Xenakis utilised in his vocal works, but it is the only theory that he discusses so explicitly for its use as a compositional model in the forward to the score of *N'shima*. Even if the application of this motion is not literal and straightforward (as we shall see in chapter three) it is worth discussing – albeit briefly – its basic principles and how it can affect the musical outcome. Mathematics was used as a tool for organising the musical material – a means to an end – not as a rigid framework for composing music. Unfortunately, academic discourse has been inclined to discuss the scientific construction of Xenakis's output as its governing factor.[72] But in the end this misses the forest for the trees. Scholars with the necessary education to understand Xenakis's 'formalised music' have often disregarded its origins and his other intellectual influences. No matter how excellently some analysts can theorise about the mathematics of 'stochastic music' they may have never read the philosophy of Parmenides or Plato and therefore they misread and misrepresent Xenakis's art. The composer was deeply concerned with the aesthetics of his works and the final *musical* result. If Xenakis had been interested in rules and pure logic he would hardly have criticised the principles of serialism so strongly. His much-discussed book *Musiques Formelles* (Formalised Music), written in 1963 followed by an updated edition in 1976, aims at revealing his diverse mathematical thinking, but only insofar as can theory be transformed into practice and science can be used for composing music in an interesting way.

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[72] Examples of this tendency include: Peter Hoffmann, 'Music Out of Nothing? The Dynamic Stochastic Synthesis: A Rigorous Approach to Algorithmic Composition by Iannis Xenakis, Technische Universitaet Berlin, 1998 (in German). Ronald J. Squibbs, 'Analytical Issues in Recent Instrumental Works of Iannis Xenakis.' Yale University, 1996. Rosalie la Grow, Sward, 'An examination of the mathematical systems used in selected compositions of Milton Babbitt and Iannis Xenakis.' Doctoral Dissertation, Evanston: Northwestern University, 1981. Perhaps the first organised attempt to look at different aspect of Xenakis's works was made in Paris at the symposium *Presences of Iannis Xenakis* (1998).

A substantial part of this book consists of revised articles Xenakis wrote for the periodical *Gravesaner Blätter*.[73] The composer talks extensively of his 'free stochastic music' with certain mathematical operations, which helped him to produce music from the principles of indeterminism. The entire book deals with higher mathematics and even his chapter 'Towards a Philosophy of Music' is followed by mathematical calculations in order to explain the philosophical basis of determinism and chance as a metaphysics of music. Without doubt *Musique Formelles* is an extremely difficult book to penetrate.

A firm grasp of most of the mathematical theories Xenakis discusses in the book is absolutely necessary before it can be read. For composers and musicologists, like myself, not familiar with scientific concepts and algorithms the text is formidably difficult (a permanent critique and disavowal of the book in question by many). For those who can follow the composer's calculations, *Formalised Music* may offer new insights for future music research (what mathematics can deliver). The mathematical theories Xenakis used aided him to form his own personal musical language, but they were not working only on a personal level. Other composers may also use and benefit from this system if they understand the technical aspects of it and are interested in this direction. But despite the apparent scientific basis of Xenakis's music and the title of the book, his thoughts were always tied to the musical outcome of his works. 'To make music means to express human intelligence by sonic means', he wrote. 'This is intelligence in its broadest sense, which includes not only the peregrinations of pure logic but also the logic of emotions and of intuition.'[74] The fact that it is not always discernible which aspects of Xenakis's music follow the mathematical logic and which the logic of emotions makes things more complicated for researchers, who wish to examine how Xenakis dealt with the consequences of those theories and not merely what they are.

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[73] Harley, *Xenakis: His life in music*, 21.
[74] Xenakis, *Formalised Music*, 178.

The ancient Greek heritage

I have argued that it has become a habitual response to quote Xenakis's mathematical theories in order to understand the significance of his compositions, and that as a result, we sometimes either ignore or underestimate the genuine root of his inspiration. Yet the foundation of Xenakis's thought is indissolubly linked with the world of classical Greece, particularly with that of the pre-Socratic philosophers. Pre-Socratic or Ionian philosophers (end of 7th century BC) wrote a significant chapter in the history of early philosophy. They are credited with pioneering contributions concerning the understanding of the world, developing rational thinking and important philosophical and scientific concepts. Their doctrines exercised an enormous influence upon Plato and Aristotle and also on contemporary thinkers such as Heidegger and Popper. The latter sought to explore and picture timeless concepts such as 'infinity', 'substance', 'function of numbers', 'space-time' relationships, 'motion', 'chance', 'rational order', and 'nature'.[75] Xenakis's engagement with their philosophy included both the music theory of Pythagoras and Aristoxenos and the abstract syllogisms of Parmenides and Herakleitos. He was mainly interested in the numeric state of things ('all things are numbers') that Pythagoras declared, the chromatic scale that Aristoxenos set up, and the Parmenidian inquiry of Being and Non-Being, which inspired him to compose *Eonta* and *Herma* out of the idea of the Parmenidian theory of existence.[76] Parmenides's theory rested on the idea that whatever exists, it has always been and, therefore, there is no change. Thus he rejected notions such as motion and becoming in sharp contrast with Heraclitus's belief that 'all things move'. Xenakis states:

> The ancient philosophers – the Stoics and Epicureans – devoted much of their attention to this [indeterminism] [...] The first thing a composer comes up against is the rule. What is the rule? I knew it had to do with determinism and

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[75] For a comprehensive account of early Greek thought, see A.A. Long ed. *The Cambridge Companion to Early Greek Philosophy* (Cambridge: Cambridge University Press, 1999).
[76] Varga, *Conversations*, 102. See also J.V. Luce, *An introduction to Greek philosophy*, (London: Thames and Hudson, 1992).

> indeterminism, and I was trying to find the musical equivalent of these notions [...][77]

As the composer explains in his *Formalised Music*, awareness of the pre-Socratic school of thought raises interesting questions in relation to a musical composition, especially the idea of *ex nihilo*[78], and the concepts of determinism or chance. He also writes that through formalisation he attempted to reconstruct part of the musical edifice *ex nihilo*. It seems that the young Xenakis was particularly concerned with the idea of creating music – even partially as he states – from scratch. However, some years later in his interview with Varga, he claimed that 'no one can create a new world. It's impossible to create something really different, it is sad; we are prisoners of ourserselves.'[79]

We should not view Xenakis's affinity for the ancient world only as the proto-material for the mathematical dimension of his works. As already stated, it was first and foremost a personal experience for him, an escape from contemporary reality. But apart from his imaginary engagement with the ancient readings, the whole issue of originality and new sonorities is embedded for Xenakis in the reconstruction of the Greek scales. Thus although he frequently points towards the relationship between antiquity and modern mathematics, he also believes that an intense and genuine interest in the former could hugely challenge and expand the language of Western music. This is discussed in his essay 'Antiquity and Contemporary Music' (1966), where Xenakis talks of his vision of coming closer to the ancient sound.[80] It is not accidental that in the same year Xenakis's first major drama, *Oresteia,* was premiered in the city of Ypsilanti in Michigan after a commission from the local festival there. In this essay, Xenakis proposes that in order to compose music for an ancient play, musicians should bring forward for consideration the significance of the ancient text as a source of sonic reconstruction. In another essay entitled 'Cultural Tradition and Creativity', written ten years later, Xenakis stresses the importance of

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[77] Varga, *Conversations*, 76.
[78] Xenakis, *Formalised Music*, 207.
[79] Varga, *Conversations*, 71.
[80] This essay will be discussed in more detail in the third chapter.

preserving non-Western cultures and defines as 'cultural tradition' the totality of knowledge on a scientific, artistic, technological and philosophical level.[81] Both Xenakis's music and his writings engaged with a plurality of ideas. Politics, philosophy, science, architecture, all formed the paradigm for a new discourse.

[81] Xenakis, *Essays on Music and Architecture*, 154.

Chapter one: Review of the literature and overview of the vocal works.

This chapter consists of two parts: first, a discussion of the current literature concerning publications on Xenakis and second, an overview of his vocal oeuvre. The aim of the first part is to present, describe, and discuss the existing literature on Xenakis. The selection of the books concerns publications in English, including monographs on the composer's life and work, collections of essays, and two important doctoral theses.[82] The articles presented here, written in various languages, constitute the current discourse strictly on Xenakis's vocal music. The literature review will include a presentation of the subject matter in each book or article, the principal objectives of the author, and a brief critical appraisal of the final result he or she achieves. The purpose of this is to convey to the reader the contribution of the present thesis to the literature on Xenakis in relation to his vocal works by discussing how and to what extent the earlier and current research is related to the topic of this study. The second part aims at presenting Xenakis's vocal works in overview, discussing their principal characteristics and also the main differences and similarities with his instrumental works.

The Xenakis literature

Matossian: authorised biography

There are five books in English on Xenakis and a sixth one written in both English and French. Nouritza Matossian's frequently-quoted book *Xenakis*

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[82] There are a number of doctoral dissertations and books on Xenakis written in languages other than English. The two main monographs are: *Xenakis* Enzo Restagno (ed), (Torino: EDT Music, 1988) and Françoise-Bernard Mâche *Portraits de Iannis Xenakis* (Paris: Bibliotheque Nationale de France, 2001). The dissertations written: Baltensperger André, *Iannis Xenakis und die Stochastische Musik. Komposition im Spannungsfeld von Architektur und Mathematik*, Zürich, Paul Haupt, 1995, Hoffmann Peter, Music out of Nothing? Dynamic Stochastic Synthesis: A Rigorous Approach to Algorithmic Composition by Iannis Xenakis, Doctoral Dissertation, Université de Berlin, work in progress. Iliescu Mihu, *Musical et extramusical. Eléments de pensée spatiale dans l'œuvre de Iannis Xenakis*, Doctoral Dissertation, Université de Paris I, 1996, 393p. *Portrait(s) de Iannis Xenakis*, François-Bernard Mâche (ed), Paris, Bibliothèque Nationale de France, *Regards sur Iannis Xenakis*, prepared and organised by Hugues Gerhards, Paris, Stock, 1981, Solomos Makis (Gerassimos), *A propos des premières œuvres (1953-69) de I. Xenakis. Pour une approche historique de l'émergence du phénomène du son*, Doctoral Dissertation, Paris, Université de Paris IV, 1993.

published in 1986 was the first – and currently the only – biography on Xenakis, and also included a discussion of his principal theories.[83] Although not a music scholar, but totally in love with Xenakis's music from an early age, Matossian was chosen by the composer to be his 'living biographer'.

> Thanks to the force with which his music had flattened me in the Queen Elizabeth Hall as a young student hearing it for the first time, I grasped instantly that here was philosophy born as music. It was instinctive. An illumination. And just as instinctively, a year later Xenakis himself accepted me as his biographer. 'But I'm not a musicologist,' I blurted. 'I don't need someone to count my notes. I've already done that. You are a philosopher. You speak Greek. You love my music.' For Xenakis it was that simple.[84]

It is true that that there is an implied attachment to philosophy in most of Xenakis's works. Matossian was probably the first person to acknowledge this and also the first author to write extensively about Xenakis's pluralism and in particular about his vocal music in a whole chapter entitled 'total theatre', a term coined by the composer. However, it is interesting that Xenakis did not choose a musicologist or a musician to write his biography. What could this reluctance indicate? Xenakis's music had not been treated sympathetically by other composers at the beginning of his career. For this reason he might have been unwilling to trust the discussion of his music to other professional musicians. The composer was once particularly critical of the fact that a paper he submitted to a musical journal would be reviewed by referees before its publication.

> It is out of the question that I shall submit my writing to the censorship of professional referees, this sort of censorship was not understood at the start. I was to have complete freedom to develop my ideas. I would never have accepted, being a professional referee myself.[85]

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[83] Nouritza Matossian is a biographer, a broadcaster, and an actress. Her book on Xenakis was first published in French in 1981 and then published in English in 1986. As Matossian writes, a book on a living composer is an unfinished book and she is now writing an updated version of her first book which will also include Xenakis's late period. Matossian has co-produced with Marc Kidel, an hour-long documentary on Xenakis's life entitled *Something Rich and Strange* (BBC, 1991). In 1998 she also wrote the biography of the Armenian artist Arshile Gorky: *Black Angel.*

[84] Nouritza Matossian 'A Composer Beyond Music' in *Contemporary Music Review* 21, no 2-3, (2002): 9-10.

[85] Roger Reynolds, ' ...Tireless renewal at every instant, at every death...' *Perspectives of New Music* 39, no.1 (2001) 8.

Is it possible that Xenakis might have had similar reservations about the writing of his biography? We shall never know for certain, but it is clear that he did not feel comfortable being criticised by other musicians.

Matossian's monograph gives equal emphasis to Xenakis's life, music, architecture, and philosophy, but we should point out that although the book was published in 1986, the author seems to be more willing to discuss Xenakis's early works from the fifties and sixties than his music of the seventies and early eighties. In the first two chapters the author narrates Xenakis's early life both in Athens (childhood and resistance) and Paris (his first steps and collaboration with Le Corbusier). The book consists of primary sources, which are conversations with the composer, a life story that Xenakis sometimes considered unworthy of interest. He would even warn Matossian to avoid mentioning certain events from his personal life although in the end, as the author writes, every trivial detail proved fundamental information in uncovering Xenakis's personality.[86] In the third chapter, with the poetic subtitle 'The Eruptive Unconscious', Matossian equalises the importance of both architecture and music in Xenakis's creativity, dedicating the whole chapter to his architectural achievement, such as the great *Couvent de La Tourette*; and she also talks about *Metastasis*, Xenakis's first major composition. Here Matossian draws a parallel between music and architecture, emphasising the importance of their interaction and their mutual benefit in Xenakis's creative process. There are also two separate chapters on the famous Philips Pavilion and the composer's relationship with the eminent architect Le Corbusier, the employer of Xenakis for twelve years, who undoubtedly exercised a great influence on him both as an architect and as a musician. A relatively detailed comparison is given between the problems and solutions in those fields and how Xenakis interchanged the concepts of form, structure, analysis and construction from both music and architecture. Concerning the actual music, Matossian goes along with the two principal ideas of stochastic and formalised music, the basis of Xenakis's music philosophy,

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[86] Matossian, *Xenakis*, 8.

which are explained at length and in simple terms in two independent chapters. In another separate chapter she discusses Xenakis's *Polytopes*,[87] a multimedia spectacle series including light, sound, and architecture. Here the discussion also involves the famous and massive *Persepolis* (1971),[88] a 56-minute tape piece that Xenakis composed for the 2500th anniversary of the establishment of the Persian Empire,[89] and the *La Légend d'Er* whose text is rooted in the platonic hypothetical 'music of the spheres'.

Matossian's book remains even today a classic biography and a basic introduction to the most important aspects of Xenakis's life, music, and concepts. The author demonstrates the variety of scientific and philosophical frameworks in which Xenakis's music functions. Unfortunately, the fact that the author does not indicate the date of each composition and also that very specific chapters are combined with more general ones, bearing abstract titles, might perplex the reader concerning its overall structure.[90] Additionally, Matossian's book is Xenakis's official biography (authorised). Therefore, despite the useful unpublished material that the author brings to the reader (Xenakis's recollections of the most important moments in his life, personal and professional letters), Matossian writes more an historical biography than a critical one, confined to a descriptive narrative about Xenakis's major achievements and events. The author's enthusiasm for her subject is apparent throughout the book and is clearly reflected in very personal and utterly poetic descriptions of Xenakis's music ('the experience is one of being lifted up onto successive planes of sound', 'Pithoprakta...joyfully demonstrates Xenakis's capital discovery that music is a medium of thinking', 'Xenakis...bases creative work on a strong theoretical foundation and uses his analyses with a normative force in composition').

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[87] In Greek 'poly' means many and topos 'place'.
[88] Persepolis was the ancient capital of Iran.
[89] The piece was a commission of the Iranian government of Shah who was a dictator.
[90] These chapters are: 'The Way of Truth and the Way of Seeming', 'Symmetry under cover', and 'Branching Out'.

Harley: an essential companion

James Harley's[91] monograph *Xenakis: His Life in Music* (2004) is the second and more recent study on the composer written in English. The author often quotes material from Matossian's book, but at the same time he provides a more dispassionate discussion of Xenakis's music, offering his own analytical insight and comments for each composition based on his study of the scores. The book consists of seven short chapters: 'The outsider', 'From the personal to the individual', 'The voice and the stage and a new conception of time', 'Arborescences, random walks, and cosmic conceptions', 'Sieves, ensembles and thoughts of death', 'Melody, harmonic colour and nonlinear form', and finally 'The late works, abstraction and intensity'. The promising title of the book may mislead the reader into expecting a deep and lengthy discussion of Xenakis's eventful life and its impact on his compositions. However, as the author states in the preface, this study is introductory and provisional, aiming at giving an overview of the composer's complete output. In the main, Harley follows a chronological account of the works he discusses that eases the reader into assessing Xenakis's compositional development from an historical perspective. The point of providing a survey of the composer's total oeuvre appears to be a fair one. The book serves as a good reference source and the author provides a brief commentary on each work. Most importantly Harley's discussion includes Xenakis's least well-known compositions, such as, *Windungen* (1976) *Embellie* (1981), *Nyuyo* (1985), *Ergma* (1994) and also his late works which are absent from Matossian's book as it was published when the composer was still alive. Additionally, Harley considered Xenakis's vocal music on an equal footing with his instrumental works. Alongside the discussion of individual works, the author deals with concepts and terms which are essential to Xenakis's music such as 'game theory', 'stochastic music' and 'outside-time', but without offering a new insight to the readers who have closely studied Xenakis from other sources.

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[91] James Harley is a Canadian composer and academic, who studied aesthetics with Xenakis between 1985 and 1987.

Harley's intention to give an overview of the composer's complete output has certainly been realised. His book is a useful and succinct reference source, an essential companion to Xenakis's oeuvre. However, the fact that the author opts for a cursory consideration of all his works instead of a rich and detailed account may indicate that a monograph on Xenakis by a single writer can be extremely demanding (and challenging) in dealing efficiently and in depth with all aspects of his music.

Varga and Bois: interviews with the composer

The books *Iannis Xenakis* (1967) and *Conversations with Iannis Xenakis* (1996) by Mario Bois and Bálint András Varga respectively are interviews with the composer published in English. The first one is very short and elementary and it covers Xenakis's life and works until the date of its publication, which is to say, barely one quarter of the composer's oeuvre. Varga's book is divided into two parts; the first includes the interview he had with Xenakis in 1980, originally intended as the programme note for a concert dedicated to his music in Budapest. The other half of the book is a second interview Varga had with the composer in 1989. The author is the head of promotions at Universal Edition in Vienna and although the book is not a scholarly one, it has been used as a reference book by other scholars, while also being an informative book for the non-specialist. Questions about Xenakis's upbringing and his biographical background dominate the first chapters, followed by the composer's own explanation concerning his theories and compositions. His role in teaching is discussed separately, giving particular space to Xenakis's two famous institutions EMAMu and CEMAMu. The second part of the book follows a less coherent structure, discussing mainly the composer's development and creativity in the last nine years between the two interviews. Thus Xenakis here talks of his UPIC idea and more recent compositional theories, meditating also in the last chapter on the role of the composer in society. Although Varga's book is divided into two sections based on interviews with the composer that were chronologically widely separated, he manages to create a story and cement different aspects and events of Xenakis's portrait.

Conference presentations

In the most recent literature on Xenakis there are three studies which consist of a selection of articles on different topics. The first is *Presences of Iannis Xenakis* (2000), the fruit of a symposium at the *Centre de Documentation de la Musique Contemporaine* in Paris in 1998, dedicated exclusively to Xenakis's music. The book contains the vast majority of the papers presented in this conference in either English or French.[92] The aim of this collection (twenty-seven essays) was to bring together internationally acclaimed scholars and specialists from various disciplines. The writers include Nouritza Matossian, Peter Hoffmann, Agostino Di Scipio, James Harley and François-Bernard Mâche. The book is divided into five parts: a) 'sources and late works', b) 'theories', c) 'aesthetics', d) 'analysis' and e) 'architecture and polytopes'. Its editor, Makis Solomos[93], states in the introduction that 'the present book voluntarily limits the place given to the analysis of Xenakian theories. Today they are well-known. . .The time has come to rectify (while not necessarily erasing) the image that continues to dominate: the image of a composer-"mathematician".' There is certainly a fusion of aesthetics and formal analyses of Xenakis's works in this book. Some of his mathematical and complex theories are aired in certain chapters of the book, but overall what we have is a selection of papers, which further our perception of Xenakis's world. The paper by Beatrix Raanan on Xenakis's *N'shima*, the only one regarding his vocal music, Linda M. Arsenault's narrative interpretation of *Evryali*, the presentations of Joëlle Caullier and Candido Lima on the subject of myth, and Elizabeth Sikiaridi's 'Morphologies' in relation to Xenakis's architectural work put forward contemporary crossings of art, architecture, aesthetics, and music in an uncomplicated and attractive manner.

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[92] There are nineteen articles in French and eight in English.

[93] Makis Solomos is a composer and musicologist at the University of Montpellier 3 who has undertaken extensive research on Xenakis's music. His thesis 'A propos des Premières Oeuvres (1953-1969) de I. Xenakis pour une Approche Historique de l'Emergence du Phénomène du Son' (Université de Paris, 1993) examines Xenakis's early works and the emergence of sound as sonority in specific works.

Special Issues

A similar study was published two years after *The Presences of Iannis Xenakis*, also inspired by the same symposium in Paris. This time it was a variety of essays collected for *Contemporary Music Review* entitled 'Xenakis Studies: In Memoriam' (2002). We can sense here the same intellectual climate: speculation on all aspects of Xenakis's music and ideas presented in the most authoritative and interesting way. It was certainly another much-needed volume, one which contributed immensely to the Xenakian interdisciplinary studies. The resulting mosaic includes eleven articles on various topics, such as Xenakis's early and later works in two independent articles, an essay on *Polytopes*, suggestions for analysing group structures in Xenakis's music, reflections on performing his string music, articles on *Evryali,* and *Keqrops* and also a very interesting contribution by the book's editor James Harley, who writes about the love and significance of the sea in Xenakis's works ('As For Me, I Love the Sea! A Homage'). The articles of Makis Solomos and Mihu Iliescu, 'Xenakis's Early Works: From "Bartokian Project" to "Abstraction"' and 'Notes on the Late-Period of Xenakis' respectively, are the essays – slightly modified – presented in French in *Presences of Iannis Xenakis*. These articles will be certainly a pleasant treat for non-French speakers as here they are translated into English, but for those who master both languages they would be the least exciting reading. There are no contributions concerning Xenakis's vocal works in this issue; there are some sporadic and broad references to specific compositions, but nothing substantial or exclusive.

In summer 2004, Xenakis enthusiasts welcomed another special journal issue on the composer. This time it was *New Music Research*[94] which drew its attention to Xenakis's music, focusing mainly on his computer-based compositions. The choice of subject matter hardly surprises us given that Agostino Di Scipio (1962) was the guest editor of that issue, who is a composer and researcher with special interests in electroacoustic and

[94] Agostino Di Scipio, ed. 'Perspectives on Xenakis' *Journal of New Music Research* 33, no.2 (June, 2004).

computer music. The remaining contributors were primarily from the field of technology including the composer and software design engineer Michael Hamman and also Makis Solomos and Peter Hoffmann.

In Hamman's article 'On technology and art: Xenakis at work' the author first pursues a very informative account regarding the critical theory of technology with special references to Andrew Feenberg's[95] writings, which offer a challenging and insightful perspective on the socio-political dimension of technology. In turning his discussion to Xenakis, Hamman argues that the composer 'sought to engineer a collision between the centripetal force of sonic matter and the centrifugal force of human mediation', writing also that 'beauty in his music was to have a holistic integrity as applicable to raw materials (data, algorithms)'. In Hoffmann's essay 'Something rich and strange' (inspired by the BBC documentary with the same title) the author explores the pitch structure of *GENDY3*. Hoffmann's writings on Xenakis's music up to now have showed a consistent interest in his algorithmic compositions with emphasis on the *GENDYN* project. This consistency surely establishes him as an expert on Xenakis's computer music, but his recent writings on the *GENDYN* programme frequently overlap with his previous publications. In this essay in particular Hoffmann draws substantial material from his article 'Analysis through resynthesis, *GENDY3* by Iannis Xenakis' in the book *Presences of Iannis Xenakis*, while he has also written similar articles in the special issue of *Contemporary Music Review* ('Towards an ''automated art'': algorithmic processes in Xenakis's compositions') and in *Computer Music Journal* ('The new *GENDYN* program').

Solomos's article deals with 'Xenakis's thought through his writings'[96] and is based on the 'Apollonian' (abstraction, arts/sciences alloys, formalisation)

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[95] Andrew Feenberg is Canada Research Chair in Philosophy of Technology in the School of Communication, Simon Fraser University. His main books are *Critical Theory of Technology* (Oxford University Press, 1991) and *Questioning Technology* (Routledge, 1999).

[96] As the author states, this article is a shorter version of a longer essay published in Italian in *Iannis Xenakis, Universi del suono. Scritti e interventi 1955-1994* (Milano: Ricordi, 2003).

and 'Dionysian' (nature, complexity, expression) opposition in both his writings and his music. Xenakis's writings had not attracted scholarly discussion up to now apart from necessary citations that would help us to understand his music. Therefore Solomos's essay may provide the basis for more reflection on Xenakis's writings and although his text seems not to fit entirely with the general context of this issue, it certainly introduces the reader to another aspect of Xenakis's thought.

The article 'Formal aspects of Iannis Xenakis "Symbolic Music": a computer-aided exploration of compositional processes' is signed by four authors: Carlos Agon, Moreno Andreatta, Gérard Assayag and Stéphan Schaub. It presents computer models of Xenakis's *Herma* and *Nomos Alpha*, discussing the theoretical concepts used by the composer in the creative process. The following essay, 'Analysis by modeling: Xenakis's *ST/10 080262*', written by the composers Damián Keller and Brian Ferneyhough offers an analysis of the algorithmic composition *ST/10 080262* while Di Scipio's essay 'The orchestra as a resource for electroacoustic music in some works by Iannis Xenakis and Paul Dolden'[97] deals with the question of 'what makes music "electroacoustic" rather than "orchestra music that was eventually recorded" and also the role of audio technology, comparing the works *Hibiki-Hana-Ma* (1970) and *Below the Walls of Jericho* (1989) by Xenakis and Dolden respectively.

Other dissertations

As expected, the first doctoral theses written on Xenakis's music concern the mathematical theories he used in his works as compositional techniques. Such approaches were both natural and welcome given the unpopularity of *Formalised Music* as an abstruse book to those with no scientific background. Therefore, what emerges from these studies is an explanatory account of Xenakis's own, very individual system for composing music, strictly related to his instrumental works. Rosalie La Grow Sward's 'An

[97] Paul Dolden (1956) is a Canadian composer and performer.

examination of the mathematical systems used in selected compositions of Milton Babbitt and Iannis Xenakis' (Ph.D., Northwestern University, 1981) and Ronald Squibbs's 'An analytical approach of the music of Iannis Xenakis: Studies of recent works' (Ph.D., Yale University, 1996) are perhaps the best known theses on Xenakis in English. Both studies offer an analytical illustration of certain mathematical theories and how they are applied.

In her thesis, Sward writes that 'the dissertation deals with the rigorous application of mathematics to musical composition.'[98] Her discussion is shared equally between Xenakis and an examination of Babbitt's theories, with a comparison between the two composers and the systems they used to write music, the stochastic and the serial respectively. In her attempt to offer a relatively simplified version of Xenakis's theories and make his ideas more accessible to the average reader, Sward defines essential terms and explains complex concepts concerning the notion of stochastic music. Hence, she discusses the idea of randomness as a basic element of probability theory alongside a detailed description of the latter, the meaning of stochastic process in general and in music in particular (with and without computers), the Poisson process that Xenakis used mainly in *Achorripsis,* the Markov chains that he used in various other works, the 'game theory' and its application to musical composition, the 'theory of sieves', the concept of 'outside-time' and 'in-time' structures and also an analysis of Xenakis's specific works such as *ST/10, ST/4, Atrées, Analogiques A* and *B, Herma, Achorripsis,* and *Duel.* Sward manages to engage the average reader with the complex mathematics used in *Formalised Music* by simplified restatements of it, but her descriptions eventually entail also a considerable degree of advanced mathematics. The notion of 'outside-time' and 'in-time' structures is confined to a general overview, without including the discussion of ancient systems or music of other civilizations, which form the backbone of Xenakis's argument. Surprisingly, although Sward's concern is

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[98] Rosalie La Grow Sward's 'An examination of the mathematical systems used in selected compositions of Milton Babbitt and Iannis Xenakis' (Ph.D. diss., Northwestern University), 560.

to provide an overview and some analytical explanation of Xenakis's mathematical theories, she makes no reference to the natural phenomenon of Brownian motion that the composer uses in some of his compositions and which is another aspect of stochastic process.

The most recent thesis, by Ronald Squibbs, examines Xenakis's works written in the 70s and 80s including his piano works *Evryali*, *Mists* and *Hommage à Maurice Ravel*, works for solo strings *Mikka*, *Mikka S*, and *Theraps for double bass*, the electroacoustic music of *Mycenae-Alpha* and the UPIC System. The aim of this dissertation is similar to Sward's thesis:[99] to offer an explanation of Xenakis's mathematical models in relation to the actual music. For this reason, before the close examination of specific works, Squibbs discusses some aspects of compositional process such as 'sieve' and 'probability theory', stochastic modeling and the process of stochastic music, random walks and arborescences. In contrast to Sward's dissertation this thesis is a monograph on Xenakis's music and it includes the analysis of his more recent compositions. It also provides a more extensive biographical note on the composer's life and the people who influenced his style. Xenakis's major concepts such as probability theory and stochastic composition are examined in both cases in a context of higher mathematics, which excludes his vocal compositions.[100]

Perhaps the first non-mathematical dissertation on Xenakis was written by Helena Maria Da Silva Santana: 'L'Orchestration chez Iannis Xenakis: L'Espace et le Rythme, Fonctions du Timbre.' ('The orchestration of Iannis Xenakis: space and rhythm elements of timbre').[101] The author discusses selected works of Xenakis in relation to the effect of space and rhythm on the element of timbre. As regards space, Montana looks at *Eonta* and its

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[99] Squibbs includes Sward's dissertation in his bibliography list.

[100] Peter Hoffmann's thesis, 'Music Out of Nothing? The Dynamic Stochastic Synthesis: A Rigorous Approach to Algorithmic Composition by Iannis Xenakis', (Ph.D. diss., Technische Universitaet Berlin, 1998) is another doctoral dissertation (in German), which contributes to the literature on Xenakis discussing his music from an analytical point of view with the use of mathematics.

[101] Helena Maria Da Silva Santana: 'L'Orchestration chez Iannis Xenakis: L' Espace et le Rythme Fonctions du Timbre.' (Ph.D. diss., Paris, Sorbonne Universitè, 1998).

'mobile sonority', *Terretektorh, Nomos Gamma, Persephasa, La Légende d'Eer*, and of course, the *Polytopes* works. Concerning rhythm, she discusses solo works such as *Herma* and *Psappha*, and also *Metastasis, Jalons, Koïranoï, Sea Nymphs* and two of Xenakis's vocal works, the much-analysed *Nuits* and one of his recent vocal compositions *Serment*. In her conclusion, the author writes that due to a variety of techniques that Xenakis uses such as *col legno, col legno batturo, sul ponticello, arco, pizzicato glissando*, he achieves different timbres with several textures. As Montana mentions, these instrumental games bring us to the creation of different acoustic spaces, and therefore space becomes a function of timbre.[102] She also writes that rhythm is equally important and is conceived according to the characteristics and technical possibilities of the instruments or of the voice (where the text plays a major role in the final timbre).[103]

Literature specific to the vocal works

As noted in the introduction of this thesis, research on Xenakis's vocal pieces is still limited. One of the reasons is that our image of his music is bound up with instrumental works, which revolutionised notably the music in the fifties and sixties. Some of the instrumental, such as *Metastasis, Pythoprakta, Achorripsis, Terretektorh*, brought along a definite change in the music establishment at that time in terms of sound and method (massed glissandi, probability functions, stochastic procedures, continuous trasnsformations). Hence, to write about and analyse extensively Xenakis's instrumental music was almost a necessity and most scholars were keen to do research in that area. Furthermore, the fact that his instrumental works overwhelm in quantity his oeuvre in comparison with his vocal ones made it only natural that the approach and discussion should be unbalanced. But surely it is not only that the status of Xenakis's instrumental music overshadows what he wrote for voice, but perhaps that the vocal

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[102] Helena Maria Da Silva Santana: 'L'Orchestration chez Iannis Xenakis' 317.
[103] Ibid., 318.

compositions have not been sufficiently appreciated in their own right. Very indicative is what Robert Fajond writes:

> I admit that until recently, I knew Xenakis only through his instrumental music and I had an image of his work which today I would consider as incomplete, if not erroneous [...] Until now the originality and authenticity of his argument as a music researcher were overemphasised, especially in relation with the use of mathematics, and the novelty of a music language derived from it [...] We were very wrong, something I found out myself when I sang as a choir member the performances of 'Oresteia'. From these rehearsals and the atmosphere in which they took place I have lovely memories.[104]

The first holistic view on Xenakis's vocal music is Matossian's chapter 'Total Theatre' in her biography of him. As opposed to the other chapters of the book, the author here discusses the vocal works as a whole, making the basic distinction, and also acknowledging a significant difference in attitude, between phonemic and non-phonemic compositions, the latter having used classical texts.[105] The author states that Xenakis's early vocal compositions were praised by Messiaen for their 'spirit of rhythmic research', a natural engagement with Xenakis' studies in non-Western musics and his attendance in Messiaen's classes. As expected, Matossian gives us a lengthy description of Xenakis's two most important vocal compositions: *Oresteia* (based on Aeschylus's original text) and *Nuits* (based on a phonemic text). Given the relatively small size of the chapter in relation to the others, the author is obviously more interested in Xenakis's classical heritage and how the subject of ancient theatre is revised under his pen. This approach does not offer a satisfactory wide-ranging critique of Xenakis's vocal oeuvre, while the focus on *Oresteia* occupies a substantial part of this chapter. Towards the end, when the discussion turns to *Nuits,* the author explains the basic difference between classical and phonemic works as mentioned at the beginning of the chapter. Matossian believes that the fundamental difference of approach is that in *Nuits* Xenakis 'addresses himself to the smallest elements of sound in order to build up structures whereas in the theatre

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[104] Rober Fajond, 'Oresteia at Mycenae' in *Iannis Xenakis* (Athens, 1994) 69. ('Η Ορέστεια στις Μυκήνες' in *Ιάννης Ξενάκης* Αθήνα: Σύγχρονη Εποχή, 1994). The author talks of the performance of *Oresteia* in summer of 1978 in Mycenae, under the direction of Roland Hayrabedian and Christine Prost.
[105] Matossian, *Xenakis,* 197.

pieces he had to contend with the pre-ordained architecture of a whole tragedy and, at the smallest level, with individual words.'[106] The author is right in detecting a difference in writing between classical and phonemic works, but we may be reluctant to acknowledge that this is the fundamental one. As a general rule, Xenakis used to work with his musical material in architectural terms and most of the time he had to contend with the idea of a whole as a beginning for his compositions, no matter whether it was a concrete drama or an abstract piece. One fundamental *similarity* between *Oresteia* and *Nuits* that Matossian does not observe or at least does not mention is the block structure (different sections abruptly juxtaposed) that Xenakis applies in both works. This attitude typifies his music and in the case of *Oresteia* and *Nuits* the technique in question is a clear process. Another aspect of Xenakis's technique has to do with the idea of 'cloud sounds', whether in instrumental or vocal music. This goes back to the political slogans that the composer had in his memory for an entire life and, at the same time, it may have been a new means of musico-dramatic expression in both classical and phonemic works. Matossian rightly suggests that Xenakis was concerned with individual words at the smallest level when it comes to stage works.

In *Presences of Iannis Xenakis*, Beatrix Raanan's essay 'Le souffle et le texte: deux approches formelles convergentes dans *N'shima* de Iannis Xenakis' ('The breath and the text: two converging formal approaches in Iannis Xenakis's *N'shima*) examines the role of breath in the composition ('N'shima' means 'breath', 'spirit' in Hebrew) on a structural and semantic level. As the author clarifies, her objective is not to provide a full analysis of the score but to propose a possible way of interpreting it.[107] Her analysis also includes the 'deconstruction' of the text as she writes, but her suggestion that fragments of the text can reveal a narrative intention is

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[106] Matossian, *Xenakis,* 207.

[107] Beatrix Raanan 'Le souffle et le texte: deux approches formelles convergentes dans *N'shima* de Iannis Xenakis' in *Presences of Iannis Xenakis*, ed. Makis Solomos (Paris: Centre de documentation de la musique contemporaine, 2001), 173.

rather unconvincing.[108] Raanan's discussion extends to the role of violoncello and its interaction with the two voices always in relation to the element of breath. She suggests that on a microstructural level, the function of breath is used as a founding compositional element that produces the quantisation of the continuous line, modelling it through articulatory and timbral means, while on a macrostructure it marks the mood of the piece. Although in the introduction of the article it is clearly stated that we shall not be provided with an analysis of the piece, there is a short formal discussion towards the end, with reference to specific measures. This examination of *N'shima* is perhaps the first scholarly work on an individual vocal piece of Xenakis which deals with an aesthetic interpretation of it and, perhaps not surprisingly, is by a French author.

Xenakis's political work, *Nuits*, has attracted the most attention among scholars. This comes as no surprise given that it is the most widely known and most popular work of the composer, including his instrumental pieces. The first written reaction to this piece, by Tim Souster, came two years after its premiere in 1968 and was entitled 'Xenakis's Nuits'.[109] Despite the seemingly generous length of this article, only three pages form the actual discussion on *Nuits*, while the rest are extracts from the score. It also includes some general observations about Xenakis at the beginning of the article, which is rather expected for the time the article was written. Although Xenakis was already an established figure in the late sixties, the literature on him was embryonic. It was only natural that writings on his music would also include more introductory comments about his ideas. Souster recounts and criticises Xenakis's argument regarding the artistic impasse of serialism, while quoting from his article 'The crisis of serial music'. He suggests that Xenakis's analysis concerning the process of listening to this music is a faulty one, because in his own experience from Boulez's *Structures*, the identity of the music owes a great deal to its integral serial structure. The author is right in stating that we do not perceive

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[108] Raanan's account regarding the text in *N'shima* is discussed in more detail in the third chapter.
[109] Tim Souster, 'Xenakis's *Nuits*' *Tempo*, no.85 (1968): 5-18.

this music in classical thematicism, but we are aware of greater or lesser tensions, of activity in suspension.[110] However, Xenakis was interested more in general causality, continuous transformations, massive sonorities, and sustained clusters. Souster's article is clearly tied to his own intellectual interests and aesthetics, using the most important piece of total serialism as his argument against Xenakis's views and pointing out a block of twelve-note chords in *Nuits* that 'constitute the work's central climax', in bar 84 (Example 1.1). He compares and relates *Nuits* to Messiaen's *Cinq Rechants*,[111] describing the first as a 'fine and moving work', but Souster's analysis does not discuss the actual music of *Nuits*. Xenakis's own confession that his stochastic music was born out of the massive street demonstrations in Athens fails to convince Souster who believes this is a shaky theoretical foundation of Xenakis's aesthetic.[112] We do not know to what extent Souster was aware of the scientific context of those theories. *Musique Formelles* was available only in French at that time. The application of stochastic laws which govern these sonic phonomena – political slogans or natural events – is not mentioned in the article. As I shall discuss in chapter three, the application of Brownian motion in some of Xenakis's compositions was another example of his attachment to natural phenomena. The correlation between those phenomena and mathematics is not a negligible one and Xenakis was well aware of this. He was able to recognise mathematical laws in nature and interested in extending these observations to music.

The study of *Nuits* becomes the focus of two more articles published almost at the same time. The first one is Joëlle Caullier's 'Pour une Interpretation de Nuits, une proposition d'analyse' ('For an interpretation of Nuits, a proposed analysis', 1987) and also Christine Prost's[113] '*Nuits*: Première transposition de la démarche de Iannis Xenakis de domaine instrumental au domaine vocal', ('*Nuits*: the first step in Iannis Xenakis's progression from

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[110] Souster, 'Xenakis's *Nuits*', 6.
[111] See my discussion about these pieces in the third chapter.
[112] Souster 'Xenakis's *Nuits*', 8.
[113] Christine Prost is Professor at the University of Aix-Marseille and also choir director. She has also written an article on Xenakis's *Oresteia*, which is published in *Regards sur Jannis Xenakis* (France: Stock Musique, 1981).

the instrumental to the vocal domain', 1989). Their approaches share much in common as both authors opt for providing a basic analysis of the score. Prost offers a better organised discussion of the music, dividing it in sections. Her primary purpose is to demonstrate how Xenakis applies for the first time his instrumental techniques to a vocal piece and how the piece is structured. The author suggests a wide range of influences which, according to her, seem to have affected the vocal manifestations of *Nuits*, including Byzantine, Japanese and Mediterranean aspects of lamentations. However, her observations concerning these cultural references remain undeveloped, while the political side of the piece is not discussed to any extent. Caullier's account gives more space to the discussion of vocality and the use of phonemes, restricting her music analysis to the first 120 bars. As she herself writes, her proposed analysis is neither complete nor strictly technical, but it operates among the directions transmitted by the purely musical material,[114] meaning, perhaps, that Caullier was guided by the issues arised from the study of the score. Her approach, at least for the first part of the article, is mainly an aesthetic one, dealing with issues such as the expressivity of the work and the treatment of the phonemes. She rightly states that 'the work seems a collection of sections conceived as a progressive expansion of various parameters which lead to mass sonorities.'[115] The phonemes, according to the author, form a conceptual language in search of a kind of protohistory of human relationships and expression,[116] but like Prost, Caullier does not acknowledge the significance of war in relation to *Nuits*; nor in her generous discussion on phonemes does she explain anything regarding their Middle Eastern origin. However, both articles reflect a growing interest in Xenakis's vocal music from an analytical and aesthetic point of view and shed light on one of his interesting works.

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[114] Joëlle Caullier, 'Pour une interprétation de Nuits: Une proposition d'analyse' *Entretemps* 6, (1988): 60.
[115] Ibid., 68.
[116] Ibid., 61. ('en quête d'une sorte de protohistoire des relations et de l'expression humaines').

The article by Hans Rudolf Zeller,[117] 'Xenakis und der Sprache der Vocalität' (Xenakis and the language of vocality, 1987), in the German periodical *Musik-Konzepte*,[118] is an introductory discussion of Xenakis's vocal compositions. It was published only one year after Matossian's monograph on the composer where his vocal works are examined as a whole. Zeller's essay provides a wealth of interesting information, focusing – albeit briefly – on specific compositions such as *Polla ta Dhina*, *Nuits*, *Aïs, N'shima*, *Cendrées* and *Akanthos*. The author offers a synoptic review of Xenakis's vocal repertoire, illustrating his comments with musical examples and discussing the vocal style the composer uses in those works. Zeller writes that Xenakis's vocal writing escapes from the avant-garde music of that time, lending to his music an archaic atmosphere with primitive voices, free from tonal relationships.

The most recent discussion of Xenakis's late vocal works is Mima Muci's article on his *Kassandra:* 'Il delirio di Cassandra: Dagli scolii alla tragedia de Eschilo all'opera di Xenakis' ('Cassandra's delirium: from the school of tragedy by Aeschylus to the work of Xenakis'), added to the *Oresteia* trilogy more than twenty years after its completion.[119] Given the title of this paper, we would expect a parallel discussion of the Greek play and the music of Xenakis, but the article is divided into two almost independent parts: one discusses historical and cultural information concerning Aeschylus's tragedy and the other is concerned with a descriptive analysis of the music of *Kassandra*. The philological commentary in the first part, although providing a conveniently substantial summary (biographical information about Aeschylus, historical context, the story of the tragedy) for those not familiar with the ancient play, should not be discussed separately from Xenakis's music. In the second part, Muci provides an analysis of *Kassandra* but, as said, this examination does not include a comparison with

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[117] Hans Rudolf Zeller is a prolific writer and broadcaster on contemporary music. His writings are mainly focused on vocal, experimental music, examining the relationship between music and text, from Schoenberg to Xenakis.

[118] Hans Rudolf Zeller, 'Xenakis und die Sprache der Vocalität' *Muzik-Kozepte* 54-55, (1987): 3-27.

[119] Mima Muci, 'Il delirio di Cassandra: Dagli scolii alla tragedia de Eschilo all'opera di Xenakis' *Sonus: Materiali la musica contemporanea* 17, no.1-3, (1997): 35-47.

the Greek tragedy and how Xenakis reworked the ancient material. The author discusses mainly the musical treatment on its own terms, especially the very individual manner of the voice. She acknowledges that *Kassandra* introduces new musical elements and, although it can have an autonomous function, manages to establish links to the rest of the trilogy.

There is surely a promising interest in Xenakis's works not only from scholars specialising in his music, but also from performers who have impressive first-hand experience of his works and are keen to talk and write about it (see chapter four). The study of Xenakis's vocal music has been sporadic and not always scholarly. With the exception of Tim Souster's article, which is more a defence of serialism with a very brief summary of Xenakis's ideas and less an objective and serious account of *Nuits*, the literature on specific vocal works comprises only non-English publications. The approaches range from basic formalistic analysis to descriptive discussions and information regarding performance. Issues of vocality and the effect of the phonemic text invite an aesthetic engagement with those works which enrich our perception of Xenakis's music. The essential context of some of his vocal works, such as the political background of *Nuits* and the apparent scientific framework in *N'shima* and *Cendrées* (chapter three in the present thesis), the possible influence of Japanese singing in *Kassandra* (chapter four), and the dramatic symbolism in *Oresteia* (chapter two) have not been considered.

The vocal compositions: a catalogue

Xenakis's vocal production represents only a small percentage of his total oeuvre. The classification of the vocal works by both Matossian and Zeller, who have drawn attention to the composer's vocal compositions, divides them into two categories: works either based on classical texts or those based on phonemes, but with no reference to those written for a solo voice (using either ancient or phonemic text). The present thesis also discusses in a separate chapter the solo vocal works written specifically for the voice of

the baritone Spyros Sakkas. These pieces have their own unique artistic character and they certainly contribute to a better understanding and evaluation of Xenakis's vocal oeuvre in the course of his life. From those works only *Pour Maurice* uses a phonemic text while the other three, *Kassandra, La Déesse Athéna* and *Aïs*, are based on ancient Greek texts. But if we look at Xenakis's vocal oeuvre as a whole, regardless of the text he uses, his compositions fall into four categories: choir and orchestra (five works), choir and ensemble (eight works), choir *a capella* (seven works) and solo voice with instrument(s) (seven works), all of them equally spread out across the span of four decades.

Choir and Orchestra	**Choir and Ensemble**
Procession aux eaux claires (1953)	Zyia (1952)
Polla ta Dhina (1962)	Oresteia (1965-66)
Cendrées (1973)	Medea (1967)
Anemoessa (1979)	À Colone (1977)
Nekuïa (1981)	Idmen A and B (1985)
	Les Bacchantes d' Euripe (1993)
Choir *a Cappella*	**Solo Voice and Instruments**
Nuits (1967)	N'shima (1975)
À Hélène (1977)	Akanthos (1977)
Serment-Orkos (1981)	Aïs (1980)
Pour la Paix (1981)	Pour Maurice (1982)
Knephas (1990)	Kassandra (1987)
Pu wijnuej we fyp (1992)	La Déesse Athéna (1992)
Sea Nymphs (1994)	

The fifties: early works

Zeller's information that *Polla Ta Dhina* (1962) is the composer's first vocal composition is not accurate.[120] Xenakis's first attempts to use voice include the pieces *Zyia* (1952), the first version being for soprano and men's choir and the second version for soprano flute and piano. Its first performance was on April 5, 1994, forty two years after it was composed, for the festival *Musique Contemporaine d'Evreux. La Colombe de Paix* (The Dove of Peace, 1953) for countertenor and four-part choir, based on a Greek poem, for which Xenakis was awarded the Diploma of Merit from the World Festival of Youth and Students for Peace and Friendship in Bucharest.[121] Matossian writes that Xenakis declined to publish the score. For this reason it does not appear in the official catalogue provided by Salabert Editions. In 1952-54 Xenakis composed the trilogy *Anastenaria* for mixed choir and orchestra. It consists of: *Procession aux eaux clairs* for orchesta and mixed choir (1952-53), *Le Sacrifice* for orchestra (1953), *Metastasis* for orchestra (1953-54). This trilogy certainly does not have the unity one would expect, but it brings together Xenakis's early, undefined phase (tonal language, Byzantine sounds) with his breakthrough *Metastasis* inaugurating a completely new era for him. For this reason the composer later decided to separate it out as three independent works with their own individuality and importance. The early vocal pieces of Xenakis display an apparent influence of Greek folk music and Byzantine music, which are predominantly vocal and rhythmical. This inspiration was also supported by Messiaen's classes on analysis and rhythm that Xenakis was attending at that time.[122] Therefore, it is only natural that his first attempts to compose were vocal.

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[120] Zeller, 'Xenakis und der Sprache der Vocalität', 1. It is worth pointing out that Zeller is also the author of the linear notes of Xenakis's CD 'Musica Viva' (Con Legno, 20086), where he comments on *Anastenaria* (1952-1954), a piece written also earlier than *Polla Ta Dhina*.

[121] Matossian, *Xenakis*, 51.

[122] When Xenakis sent the score of *Anastenaria* to Pierre Schaeffer, he asked for a recommendation letter from Messiaen, who wrote: 'I recommend to you very specially my pupil and *friend* Iannis Xenakis who is Greek and extraordinary gifted in music and rhythm. He has showed me lately a quite voluminous score entitled *Les Sacrifice* whose spirit of rhythmic research has seduced me from the outset.' Matossian, *Xenakis*, 76.

Zyia and *Anastenaria* bear the weight of the Greek heritage, not strictly the ancient one, but the tradition Xenakis briefly encountered in his early years in Greece. The pieces in question do not reveal his personal musical style yet; this is only achieved later with *Metastasis.* In both *Zyia* and *Anastenaria* we get, to a certain extent, a conventional sense of harmony and the music is set to a Greek traditional, straightforward text, certainly not typical in the Xenakian canon. The vocal section of *Anastenaria* betrays a sense of austere impetus also encountered later in *Oresteia.* An essential basis for this feeling is the discreet percussion line, which lends a sense of solemnity to the piece, coupled with the simplicity of Byzantine-style chanting. The composer himself writes regarding *Anastenaria*:

> The Anastenaria: a living fragment of past civilisations, which was torn away from the destruction of the millenarians by the Greek peasants of Thrace [...] Traditional music accompanies each event; there are wind instruments, bow instruments and percussion [...] The chant of the mixed chorus is based on a medieval akritic melody, The Castel of Oria, of Cappadocian origin [...] The mixed chorus is arranged, with a certain licence, according to the rules of the folkloric polyphonies of Epirus and the Dodecanese [...] The instruments which do not sustain the two choruses make fleeting melodies which recall certain accompaniments on the lyra for popular Greeks songs from Asia Minor [...] The form is that of the antiphonal chants of ancient drama, primitive Christian liturgy and the songs of the modern Klephtes.[123]

The title *Anastenaria* refers to a religious and sacred ritual in Northern Greece performed by *Anastenarides*, a group of fire dancers.[124] Xenakis in the following text talks of the *akritic* melody and the songs of *klefies,* two categories of Greek folklore music. The former existed around the 13th century narrating the battles of *akrites* who were frontier guards, with Diogenes Akritas the most famous of all. The second group of songs have a social character and they appeared in the late Byzantine period. The

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[123] François-Bernard Mâche, 'The Hellenism of Xenakis' *Contemporary Music Review* 8, (1993): 203-204. The author writes that this text is one of the most illuminating documents written by Xenakis, because it reveals the various levels of Greek culture that the composer uses in *Anastenaria.* This article by Mâche is mainly focused on the early works of Xenakis (with brief references to later works as well), discussing the impact of the Greek culture on those works.

[124] For more information about the tradition of *Anastenaria* see the study of Loring M. Danforth, *Firewalking and Religious Healing: The Anastenaria of Greece and the American Firewalking Movement* (Princeton: Princeton University Press, 1989)

polyphony of Epirus that Xenakis mentions is a very special chapter of the Greek folk music, having a quite distinctive polyphonic tradition. [125]

The sixties: classical settings

The composition of *Polla Ta Dhina* in the early sixties was Xenakis's musical debut with classical plays. For the first time, he selected to write music for an ancient text (*Antigone*, Sophocles) and also to return after ten years to writing for voice. Between *Anastenaria* and *Polla Ta Dhina*, Xenakis was strictly engaged with the writing of instrumental music. It was a period of extensive experimentation and hard work, a crucible of his rigorously mathematical compositions, notably *Achorripsis* (1956-57), *Analoguique A* and *B* (1958-59), *Herma* (1960-61), *ST/4*, *ST/10*, and *ST/48* (1956-62).

But despite this conscious response and commitment to a mathematically-based art, especially in the fifties and early sixties, Xenakis at the same time starts writing music for a number of ancient plays. It is not that he moves away from the hermetic formalism of his early works, but perhaps after some years of a fruitful scientific speculation, he now reflects regularly on the music of the Greek drama, both as an essayist and a composer.[126] Thus, in the course of five years (1962-67) and after his first attempt on *Polla ta Dhina,* Xenakis worked on three music dramas, *Hiketides* by Aeschylus (Les Suppliantes d'Eschyle, 1964), *Oresteia* (1965-66) by the same author, *Medea* of Seneca (1967) based on a Latin text and also his first and certainly major phonemic work *Nuits* (1965-66).

The seventies: phonemic works

After this Hellenic outburst, Xenakis resumed his dealings with ancient drama ten years later with the compositions *À Hélène* (for unaccompanied

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[125] See Sotirios Chianis and Rudolph Brandl, 'Greece-Traditional Music' *Grove Music Online* ed. L. Macy (Accessed 19 September, 2004).
[126] As I shall discuss in the chapter on *Oresteia*, Xenakis wrote the essay 'Antiquity and Modern Music' (1966), discussing about the appropriate music for an ancient play.

solo women's voices or women's choir or men's choir, based on a text by Euripides) and *À Colone* (for choir, men or women twenty voices minimum, based on a text by Sophocles), both written in 1977.[127]

In between, he composed three other vocal works based on phonemic texts, the well-known *N'shima* and *Cendrées*[128] and the least known *Akanthos* (1977), for soprano and eight musicians, to a text by the composer. This piece, together with *A Hélène,* which was written in the same year as *Akanthos*, is quite uncharacteristic regarding Xenakis's vocal style. *Akanthos* reminds us of the experimental period of sixties in terms of vocal delivery, very close to Berio's achievements. Although the piece starts with a typical Xenakian passage of dramatic glissandi which is dissolved to some extent by the piano part in the first bars, the vocal line is confined to a very abstract, animated style pointing to an interplay of phonemic material. On the contrary, *À Hélène* displays an unusual lyricism, which cannot even weakly be related to the general context of Xenakis's music. This composition turns away from the dramatic context found in other classical plays, the glissando technique, and Xenakis's normative microtonal writing. The pitches are clearly defined and the listener gets an assertively conventional sense of melody (Example 1.2).

The eighties: solo works

Xenakis's later vocal music is written either for a mixed choir (*a capella* or with orchestra) or for a solo voice. His engagement with the classical texts is repeated with the pieces *Aïs* (1979), for amplified baritone, solo percussion, and orchestra of 92 musicians, *Kassandra* (1987), for amplified baritone, percussionist and a psaltery, and *La Déesse Athéna* (1992), again for baritone, and eleven musicians.[129] With the last two, Xenakis extends the original *Oresteia* trilogy written back in the sixties, renewing his interest in the Greek plays. *Aïs* is a short, independent piece based on various texts by

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[127] The first performed at the Epidaurus Theatre and the second at *Metz, Recontres Internationales de Musique Contemporaine.*
[128] These two works will be discussed in the third chapter.
[129] All these three works were written for the singer Spyros Sakkas.

Homer and Sappho and certainly one of Xenakis's most interesting works for solo voice.[130] The work *Pour Maurice* (1982) is a very brief piece for baritone and piano, using a phonemic text dedicated to Xenakis's long-life friend Maurice Fleuret.[131] In his other vocal compositions of his late period, Xenakis writes music for mixed choirs and phonemic texts, such as *Anemoessa* (1979), for 82 voices and 90 musicians, *Serment-Orkos* (1981), for 32 voices *a cappella* on a text by Hippocrates, written for an international cardiovascular congress held in Athens. *Pour la Paix* (1981), has four versions: a) for an unaccompanied mixed choir of 32 performers, b) for a mixed choir and four reciters (two men, two women) and stereo tape, c) four reciters and stereo tape (choir and pre-recorded electroacoustic music), and d) for stereo tape only. This composition is based on extracts from his wife's books *Écoute* and *Les Morts Pleureront*.[132]

The ninenties: late works

In the same year he also wrote *Nekuïa* (1981), for 80 voices and 89 musicians, based on a phonemic text mixed with extracts from *Siebenkäs* by Jean-Paul Richter[133] and also from *Écoute*. One of the least known of his vocal works, the *Chant des Soleils* (1983) for mixed choir, children's choir, and brass was performed simultaneously in various towns in the Nord-Pas-de Calais region of France. Here the text is Xenakis's after the poet, theorist, and mathematician Peletier du Mans (1517-1582). The works *Idmen A* and *Idmen B*, both written in 1985, can be performed either together or independently. The first is scored for a mixed choir, 64 voices minimum plus four percussionists, the second for six percussionists and an optional

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[130] *Aïs* and *Kassandra* are discussed in the final chapter of the thesis.
[131] Maurice Fleuret (1932-1990) was a musicologist, music critic, and a film music composer. He published *Il Teatro di Xenakis* (Turin, EDT/Musica, 1988), and he also contributed to the book *Regards sur Iannis Xenakis* (Paris: Stock, 1981), which is a collection of essays on Xenakis, including an article by Milan Kundera.
[132] Xenakis's wife, Françoise Xenakis (b.1930-), is a well-known author in France where she lives. Like her husband, she was a resistance heroine in the forties. In her book *Regarde nos chemins se sont fermés*, she describes Xenakis's last years and his struggle with his fatal illness.
[133] Jean-Paul Richter (1763-1825) was a German novelist and Siebenkas was a novel of his written in 1796.

choir. The phonemic text used in both works comes from the *Theogony* of Hesiod.[134]

In the nineties Xenakis composed six more vocal works: *Knephas* (1990), for a minimum of 32 *a cappella* voices on his own phonemic text, *La Déesse Athéna*, *Pu wijnuej we fyp* (1992) for unaccompanied children's choir based on a text by the French symbolist poet Arthur Rimbaud (1854-1891), *Les Bacchantes d'Euripide* (1993) which is Xenakis's last classical work for either solo baritone or alto soprano and baritone, women's choir, two groups of maracas and ensemble, and also *Sea Nymphs* (1994) for a mixed choir based on a text from Shakespeare's *The Tempest*. This piece is his last vocal work, written three years before Xenakis's final composition *Sea-Change* (1997),[135] for 88 musicians which concludes his creative life. Among those works *Pu wijnuej we fyp* is perhaps the most interesting one in relation to the use of text and perhaps the most difficult of his vocal works to perform, as here the text undergoes a permutation regarding its alphabet and the poem is totally incomprehensible (Example 1.3). By permutating the words, Rimbaud's work loses its essential function, and Xenakis once again moves his music away from any definitive narrative structure. In the preface of the score he writes: 'A wonderful poem has been used and its alphabet has undergone a 'mapping on itself (=substitution)'. Children are invited to discover this beautiful poem'.

Some observations on the vocal works

Humanism

If the word 'formalised' is a fair description of Xenakis's instrumental works, especially for his early pieces, then the word 'humanistic' comes closer to the nature of his vocal works, from the dramaturgy of antiquity and

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[134] Hesiod was an early Greek poet, who lived in the 8th century BC. In his work 'Theogeny' (literally the 'birth of gods') gives an account of Greek mythology and the origin of the world (cosmology).
[135] This is the second title taken from Shakespeare after *Sea Nymphs*.

the pathos of the classical works such as *Polla Ta Dhina*, *Oresteia*, and *Medea* to the emblematic role of the music in *Nuits*. Human destiny and suffering are the pivotal themes of those works, which find a parallel in Xenakis's own life. We should notice that Xenakis's two major vocal works *Oresteia* and *Nuits* were both composed in the sixties, a period of particular experimentation with voice and text. In contrast to Berio, Ligeti, or Bussoti for instance, who deliberately sought vocal complexities and imaginative scores based on them, he never aimed at giving special attention to vocal writing. 'I can't see why the human voice should have to be treated in any special way',[136] declares Xenakis assertively, but not convincingly. We can certainly claim that the aesthetic result of his vocal music is considerably different from that of his instrumental works although at the same time – as we will be seen in the next chapters – there are specific moments in *Nuits*, *N'shima* and *Aïs*, for instance, where the vocal line is treated like an instrument. In general, Xenakis's vocal language escapes from the usual 'formalism'. No matter what the composer believes, the rich variety of expression of the human voice and its inherent properties produces a sensational power not to be ignored. Any instrumental aspect – typical of Xenakis's string music in the vocal writing – should be seen as a confirmation of his personal style.

The use of text

Regarding the use of text, Xenakis's vocal compositions do not bear a significant resemblance to the works of his contemporaries. For most composers, especially during the sixties, the relationship between music and text was mingled with a challenge for linguistic exploration and ideas for extended vocal techniques. Vocal dexterity was selected to display 'oral acrobatics'[137] and it was coupled with the use of deconstructive, acclaimed

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[136] Bálint András Varga, *Conversations with Iannis Xenakis* (London: Faber and Faber, 1996) 105.

[137] David Osmond-Smith *Berio* (Oxford: Oxford University Press, 1991) 65. The music of Luciano Berio is of course the most obvious example. Berio showed persistence in setting music to acclaimed texts by Edoardo Sanguinetti, Pablo Neruda, Uberto Eco, Samuel Beckett, James Joyce, but at the same time he would completely break them up.

modernist texts, which became the basis for vocal experiments. Furthermore, the use of electronics represented a different attempt for composers like Stockhausen to explore the possibilities of the human voice with the use of technology. At the same time, music theatre flourished and this certainly had some bearing on writing for voice. But Xenakis's vocal music does not centre around this context, strictly speaking. His selected texts are remote from modernist literal works (apart from the writings of his wife), regressing almost exclusively to the historical intellectualism of an ancient heritage. Interesting exceptions are the texts by Peletier du Mans, Arthur Rimbaud, and William Shakespeare. It is not only the timeless beauty of the classical texts that held allure for Xenakis, but most importantly the natural sound of the words, the so-called *prosody*. Regarding the use of texts by Xenakis's contemporaries, Zeller writes that Xenakis was sceptical about the meaning, the sound, and the timbre of the words.[138] We shall never know for certain, but he did use texts from his wife's writings in some works. As stated earlier, Xenakis wrote only one vocal piece (*Pour la Paix*) which could be performed as electroacoustic music. This does not come as a surprise given his limited – yet interesting – electronic music in general. Xenakis's electroacoustic music counts only fifteen compositions, which is almost half the number of his vocal ones. He served new music mainly with mathematics while making use of conventional instruments and the human voice in its natural capacity. The idea of music theatre never appealed to Xenakis as such, as he envisioned and created his own theatre inspired once again from the Greek model and the idea of the 'total art'.[139]

Similarities between instrumental and vocal works

Between Xenakis's instrumental and vocal works there are some meeting points. These are mainly related to his overall style and his compositional principles. The most persistent of those common characteristics are the idea of mass sound as a 'cloud', the glissando technique, the spatial dimension of

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[138] See Zeller 'Xenakis und die Sprache der Vocalität', 4.
[139] Interview with Spyros Sakkas (2 September, 2004).

his music, and the notion of 'abstraction'. Xenakis, like many other twentieth-century composers from Schoenberg to Feldman, was particularly concerned with the latter not only as a significant musical characteristic, but also as an important aesthetical aspect of any artwork; in fact the composer regarded it as superior to anything more concrete.

> Abstraction is one of the means whereby the human mind understands and memorizes. The value of Renaissance paintings depicting saints and so on lies not so much in the stories they tell [...] as in the relationships of colours and the forms. . The same is true of Bach's liturgical compositions. I don't care about the religious aspect, I like them because of the music itself [...]To my mind, what remains of *Guernica*, for instance, is not the depiction of the tragedy of war and destruction but the shapes and colours. This is what I mean.[140]

Abstraction was sought in most of Xenakis's compositions and it was a matter of a philosophical and practical consideration from the very early steps in his career. The article 'Notes sur un geste électronique'[141] is perhaps the first written evidence of Xenakis's interest in abstract art in general and in music in particular. Here the composer relates the notion of abstraction to the element of time and he states that in many fields of human creativity such as painting, music, and mathematics, the movement of abstraction occurred almost simultaneously.

It is almost a habitual view that instrumental music is closer to the idea of 'abstraction'.[142] In Xenakis's instrumental music abstraction was pursued and achieved through the use of mathematics, which is abstract by nature, and in his vocal works through the use of phonemic texts. Thus in both cases, whether it is mathematics or phonemes, Xenakis uses universal means to create an abstract art of sounds. In the vast majority of his text-based compositions there is no straightforward narration. The composer deliberately refuses to tell a story and he favours only the abstract sound of phonemes stripped of any linguistic connotation. His concern is the overall

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[140] Varga, *Conversations,* 173.
[141] *Revue Musicale* 244 (1959): 25-30, republished in *Musique Architecture* (1971).
[142] This view was more common, but not exclusive, in the nineteenth century. Whittall defends Schoenberg's shift away from instrumental works as the expected transformation in the career of a creative artist whose ideas cannot be realised in *abstract* forms (my emphasis). See *Musical Composition in the Twentieth Century* (Oxford: Oxford University Press, 1999) 168.

form and timbre of the music as a perceptual experience. But in the end, it would be plausible to ask whether Xenakis's music is abstract, given it is not absolutely free from extra-musical references or a subjective state of mind.

In musical terms, Xenakis's abstraction ranges from the Golden Section and the Fibonacci series in his early works *Zygia* (1952) and *Anestanaria* (1952-1953) – a direct influence from Bartók – to the use of probabilities (in *Pythoprakta*) and the conception of masses.[143] When it comes to the vocal music in particular, things become less clear when it comes to abstraction. Matossian observes that 'after hearing *Nuits* the conclusion might reasonably have been drawn that it marked a neat historical progression toward abstraction'. She continues that the style of *À Colonne* and *À Hélène* challenge the argument.[144] But this is not the sole example. *Cendrées* and *N'shima* (written also in the seventies) are clear examples of Xenakis's use of abstraction despite the fact that these works contain phonemic texts. Similarly, Xenakis's last vocal piece *Sea Nymphs* (1994) is based on English syllables, (words from Shakespeare's *The Tempest*), which – although recognizable – do not form a narrative. By contrast, the stage production of *The Bacchae* in 1992 adds another dimension to the exploration of abstraction in Xenakis's works. Harley writes that the reviews for Euripides' play were mixed because of some people 'liking the music but not the explicitness of the drama, some liking the staging but not the abstractness of the music.'[145] The fact that Xenakis used the original Greek language for the five choruses shows a consistent determination on his behalf to obliterate the comprehensibility of the text. However, since *The Bacchae* is a theatrical work and indeed far more explicit than the previous one (the incidental version of *Oresteia*), it further complicates this discussion and it suggests that the exploration of Xenakis's understanding of abstraction should take into account the ways in which musical abstraction

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[143] See Makis Solomos 'Xenakis' early works' in *Contemporary Music Review* 21, no 2-3 (2002).
[144] Matossian, *Xenakis*, 208.
[145] Harley, *Iannis Xenakis*, 226.

interacts with the explicitness of extra-musical elements in his conceptualisation of the work as a whole.

A brief look at a few more of Xenakis's works also suggests that he often consciously 'sabotaged' his use of abstraction by intervening to provide tangible explanations. For example in *Nuits*, despite the abstract phonemes he used, a political statement is written in the foreword of the score as the piece is related to socio-political concerns. Moreover, in his later years, when Xenakis was preoccupied with the idea of death, he abandoned the abstract sound of phonemes in three works based on this subject. In *Nekuia* he used fragments from a German text by Jean-Paul Richter, followed by the *Pour la Paix* (with scattered phrases 'the dead will cry' or 'to die'), while *Aïs* (Hades) (as I shall discuss in detail in chapter four) is based on ancient Greek fragments, addressing the subject of death. It is interesting to note that Xenakis uncharacteristically states in the score that the role of the orchestra is to 'invoke or underline feelings' How does the notion of abstraction relate to Xenakis's comment on invoking and underlining feelings? His memories of his youth provide some clues: 'In my music there is all the agony of my youth, of the Resistance', declares Xenakis who often points out that the conception of his stochastic music was born out of the street demonstrations and the deathly sounds of the cold nights of December 1944 in Athens.[146] This statement sets up a personal, musical landscape of dramatic inspiration and it makes Xenakis's music human, poignant, and penetrating. This is particularly evident in his vocal music where the mathematical thinking is toned down, though Xenakis himself, in his conversations with Varga as I stated earlier, resists the view that his vocal music might be different to his instrumental music.[147] To these comments the composer would ask 'what do you mean by emotional', expressing a consistent refusal to perceive such a division between his vocal and instrumental works.[148] Intriguingly, Françoise Xenakis believes that the

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[146] Bois, *Iannis Xenakis: The Man and his Music*, 16.
[147] Varga, *Conversations*, 104.
[148] Interview with Françoise Xenakis, June 15 2004.

vocal works are different just because the voice itself is better able to express emotions and is therefore more 'emotional'.

This relationship between abstraction and emotional expression in Xenakis's raises some interesting questions: if the agony of his youth and the mass demonstrations in Athens underlie his stochastic music, then there is a sense that, despite Xenakis's obsession with musical abstraction, his music was never truly abstract. One might even argue that, in pursuing abstraction, Xenakis was battling against the traumas of his youth by seeking to wipe out the emotional burden of that time in his life. These tensions are sometimes clearly evident; for example in his conversation with Varga, where Xenakis does not pretend to know the answer to the question of how to substitute emotions with abstract events and relationships.[149]

Xenakis's attempts to achieve a detachment from emotional expression in music can also be observed in his attitude towards vibrato. Concerning the aesthetics of performance, whether vocal or strictly instrumental, he shows a strong preference for a non-vibrato technique, which dominates his entire oeuvre. Xenakis states that the use of vibrato can be very interesting in Indian music, for example, where vibrato is used to make the sound more attractive; but he does not explain why he finds the technique in question sounds more interesting in Indian music than in Western music.[150]

> I hate vibrato because it tends to be mechanical. It sounds so silly it spoils the music – either the melodic pattern or the style of the compositionm [...] If, however, you can control it vibrato can be a very interesting aesthetic tool, for we are very sensitive to it.[151]

One explanation is that Xenakis wished to narrow the gap between performer and composer by asking for a precise interpretation of his scores.

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[149] Varga, *Conversations with Xenakis*, 103.
[150] Conversation between Morton Feldman and Iannis Xenakis (part of a five-day master class) Friday 4 July 1986 at De Kloveniersdoelen, Middelburg, The Netherlands. See http://www.nieuwe-muziek.nl/ianmor1.htm (Accessed 12 September, 2004).
[151] Ibid., 154-155. See also the *New Grove* 2nd ed., s.v. 'Vibrato'. In contrast to Xenakis's aesthetics, it is said that the use of vibrato in the 20th century came to be regarded as a special effect to be employed for character delineation. Cage also asks for a vibrato-free playing in most of his works.

He thought that the emotional disengagement on the singer's part is aided by the absence of a narrative text and that the lack of vibrato, especially in vocal music, rescues the music from any subjective expressivity. But 'without vibrato' does not mean 'without expression' and the lack of vibrato cannot guarantee objectivity or emotional detachment. As I shall discuss in chapter four, the relationship between Xenakis's regular musicians with his music was probably not as detached as the composer wanted.

Another similarity between instrumental and vocal music is the idea of mass sonorities, the galaxies or clouds of sounds, which is closely linked to the dense and complex textures that he often favours. Again here, the composer is interested in the macroscopic effect of his music as a single sonic entity, which gives birth to a holistic architectural approach to musical form, from the general to particular. This is a common characteristic in both instrumental and vocal works as it is Xenakis's typical aspect of thinking and writing about music. The idea of sound masses, stochastically controlled, was of particular import to Xenakis given his experience of war and mass demonstrations. It could also reveal a link to Varèse's aesthetics – Varèse being Xenakis's intellectual mentor – for mass sonorities. With his vocal works, the effect of 'cloud' sonorities is accomplished with an asynchronous singing of the text or with vocal *pizzicato* in *Oresteia* and *Nuits* respectively. Alongside dense textures and thick passages, which are mainly a direct result of sustained, static clusters, the notion of spatiality was often one of Xenakis's compositional concerns applied in most of his compositions.[152] Spatial music became a major consideration and much-used practice in the second half of the twentieth century, with Ives's and Stockhausen's music standing as the most famous examples of this idea. In the case of Xenakis, his spatial music could be a symptom of his earlier professional life as an architect for more than twelve years.

The idea of space and spatial sound is interestingly demonstrated in Xenakis's *Eonta* (sextet for piano and brass quintet, 1963), *Terretektorh* (for

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[152] See the article of Maria Anna Harley 'Spatial Movement in the Instrumental Music of Iannis Xenakis' in *Journal of New Music Research* 23, (1994): 291-314.

orchestra of 88 musicians dispersed among the audience, 1965-6), *Nommos Gamma* (for orchestra of 98 musicians dispersed among the audience, 1967-8), and *Persephassa.* All these four works written in the short span of seven years, indicating perhaps an organised attempt to combine his recent, architectural experience with regards to space and sound. Much later he also composed *Alax* for thirty musicians divided into three ensembles (1985) although in his interview with Varga, Xenakis denies that he composes music with space in mind.[153] The spatial approach is different in each work as the aesthetic aim differs from one piece to another. In the course of these years in which Xenakis wrote spatial instrumental music, he also wrote most of his theatrical pieces, where the physical space of the stage was an additional consideration for achieving similar results. In *Oresteia* the mobility of the sound is accomplished with the movements of the performers who wear various instruments. This idea of a mobile sound due to the physical movements of the musicians was first applied in *Eonta*, which was composed prior to *Oresteia.* Although Xenakis used this technique in more than one composition, he makes contradictory statements concerning the principal idea. He states that 'movement is an interesting means of expression [...] genuine movement can come only about if the musicians surround the listener.'[154] A few years later, Xenakis argues that 'the problem is that the movement of performers is theatrical. Besides, when the sound moves with the speed of a walking human it is not interesting'.[155] In *Persephassa* and in the first part of *Oresteia*, a circular example of spatiality is created, as in the former the percussionists encircle the audience while in *Agamemnon*, as annotated in the score, the male chorus forms two semi-circles around the public.[156]

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[153] See Varga, *Conversations*, 208.
[154] Varga, *Conversations*, 208.
[155] Harley, 'Spatial Movement in the Instrumental Music of Iannis Xenakis' *Journal of New Music Research*, 299.
[156] It would be beyond the scope of the thesis if we discussed Xenakis's electroacoustic music in relation to space. It is another chapter of his creative life, which begins with *Concrete PH* (1958), composed for the Philips Pavilion and is extended with the *Polytope* works in the later years.

Another significant similarity between Xenakis's instrumental and vocal works is the block-structure. The search for timbral contrast is certainly apparent in most of his compositions through block episodes, which became Xenakis's typical feature regarding form. It has been suggested that this compositional process is part of Stravinsky's legacy. Jonathan Cross writes that the way Stravinsky's blocks of music are interrupted gives a rough character, which can be heard in his important successors such as Birtwistle, Andriessen, Varèse and Xenakis.[157] Nevertheless, as regards Xenakis's block-structures the name of Bartók comes more readily to mind. Although Xenakis never acknowledged any direct influence from either Varèse or Bartók, traces of the latter are found throughout his music whether concerning string techniques, the *Fibonacci* series, the folk material in his early works, or even the blocks of music. Both *Oresteia* and *Nuits* are built on such blocks of contrasting textures that enhance the dramatic sense, alternating the registers of expression. If Stravinsky's block-construction bears analogies to the principles of Cubism[158], the equivalent for Xenakis is the philosophical statements made by ancient Ionian philosophers who used adjoining sentences that differed sharply in content without the need to provide connecting lines.[159] As we shall see in the discussion of *Nuits* (chapter three), the contrasting blocks do not threaten the logic of continuity. A structural unity is achieved despite the evident concern for a block form.

Xenakis's frequent use of percussion is evident in both his instrumental and vocal works. With these compositions Xenakis tackled the problem of pure rhythm and also the challenge to write interesting music for an instrument which does not always have the same colour.[160] Although it does not offer the continuity Xenakis was seeking, it was used extensively in half of his vocal compositions and many of his instrumental. The two solo works *Persephassa* (1969) and *Pleïades* (1978), both for six percussionists, are

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[157]Jonathan Cross, *The Stravinsky Legacy* (Cambridge: Cambridge University Press, 1998) 20.
[158] Cross, *The Stravinsky Legacy*, 20.
[159] Varga, *Conversations*, 143. Xenakis also mentions that this happens in Buddhism and Hinduism.
[160] Ibid., 179.

perhaps among the most interesting compositions of Xenakis. In some of his ensemble music (*Achorripsis, ST/10 Atrées, Palimpest, Thallein, Khal Perr, O-Mega, Idmen B, La Déese Athéna*) the percussion plays a principal role and in combination with other solo instruments in works such as *Zythos* (1996) for trombone and 6 percussionists, *Dmaathen* (1976) for oboe and percussion, *Komboï* (1981) and *Oophaa* for harpsichord and percussion (1989), and also in the vocal works *Aïs* and *Kassandra* both for baritone and percussion. In *Polla ta Dhina*, *Oresteia*, *Medea*, and *Bakxai* the percussion has an organic role producing the necessary pulse of a dramatic context. In *Medea*, for instance, it provides a clear framework, almost like a full-fledged melody, which dictates the austere ethos of the piece. This is quite characteristic in most of the other works where the natural rhythm of the text is coupled with the percussion breaks, as in *Kassandra*, or underlies the dramatic progression of a composition. Thus although the percussion does not offer the continuity of the strings, Xenakis used it to lend or enhance the dramaturgy of his works, when necessary.

Chapter Two: 'Born out of the holy bones of Greeks': *Oresteia*

This chapter deals with Xenakis's most celebrated 'classical work': the trilogy *Oresteia* (1965-6). This composition, based on the tragedy by Aeschylus, is one of the composer's masterpieces in his entire oeuvre. *Oresteia* embodies Xenakis's passion for the Classical world and his life-long conviction that the study and revival of the Greek scales can pave the way for the music of the future. He was concerned with the organisation of ancient systems and how they could offer new musical structures. He was also interested in investigating the theories of Pythagoras and Aristoxenus in relation to modes and tetrachords as musical systems. Although Xenakis's ideas challenged new music through the application of mathematics, he also displayed a sustained consideration for the reconstruction of ancient Greek music as a 'solution' to the limited possibilities of Western music. In this chapter I shall look in particular at Xenakis's essay 'Antiquity and Contemporary Music' (1966), written in the same year as *Oresteia's* completion, and in the context of this I shall discuss his terms 'en temps – hors temps' ('in-time' and 'outside-time'). A philological account of Aeschylus's original play will be given and in addition, I shall investigate Xenakis's setting of the Greek text and his theories regarding music for ancient tragedies.

America – The first conception

Xenakis's *Oresteia* was first performed on June 14th 1966, at the small town of Ypsilanti in the Briggs Baseball stadium at Eastern Michigan University, under the direction of Alexis Solomos. Matossian writes that 'despite its success, this production was in Greek', but she does not specify whether it was in modern or in ancient Greek. This performance was the second production of Aeschylus's play in the history of American theatre while the first commercial performance of the complete *Oresteia* (excluding

University productions) was given in 1961 by the Greek theatre 'Piraikon'.[161] Here, I shall examine the concert version of *Oresteia* (suite), which Xenakis wrote after the American production. This version is much shorter than the first one – the music for the play lasts about 100 minutes while the concert version is only 40 minutes – but the most important difference is that Xenakis uses the original Greek text and not the English translation of the Ypsilanti production.[162] As the composer remembers:

> Originally [...] Oresteia was meant to be incidental music for the tragedy, commissioned for a festival in Michigan. Inhabitants of the city of Ypsilanti discovered that the name was that of a Greek revolutionary [...] Subsequently I fashioned a suite out of the main numbers based on choruses (*'choros'*=dance).[163]

Alexis Solomos[164] was a very experienced director of ancient tragedies and Xenakis, being aware of his skills had a correspondence with him asking not only for further directions regarding the performance in question, but also for some technical details concerning Aeschylus's text.

Paris, 06/01/1966

Dear Mr. Solomos,

I have finished with the profile of Agamemnon. I am continuing with the other two tragedies.[165] That's a lot of work, but it is interesting. As soon as I finish even partially with the notation I will send it to you. The music is born out of the holy bones of Greeks.[166] I needed to read

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[161] See Karelisa V. Hartigan *Greek Tragedy on the American Stage: Ancient Drama in the Commercial Theatre 1882-1994* (London: Greenwood Press, 1995), 68-69. From the same source (p.96) we learn that the citizens of Ypsilanti, who initiated the Greek festival wanted to make it an annual event; but in the end, this ambition remained just a dream.

[162] Hartigan, *Greek Tragedy on the American Stage*, 69.

[163] Bálint András Varga, *Conversations with Iannis Xenakis* (London: Faber & Faber, 1996), 192. Ypsilantes Demetrios (1793-1832) was an eminent Greek warrior who took part in various successful battles against the Turks.

[164] Alexis Solomos was pupil of another distinguished Greek theatre director, Carolos Coun. He directed many ancient plays and he was also general director of the Greek National Theatre.

[165] Xenakis refers to *Choefores* and *Eumenides*.

[166] The phrase 'born out of the holy bones of Greeks' is taken from the Greek National Anthem.

again Aristoxenus and Ptolemy[167] and also a book on Byzantine music. Of course, my music is not ancient! But the fusion is necessary, without the ancient-Byzantine-folk exploitation [...] What are the acoustics of the theatre like? (if it has already been built) Could you send me space designs so the choice of the instruments and the rest of the media can be the best? Where will the chorus and its director be standing? They may need electronic media for the emission and the diffusion of sound [...]Your directions are very detailed and until now I have no substantial questions. The translation is too free and annoying but I will edit it as I am working on the ancient texts, of course.[168]

Iannis Xenakis

Xenakis had now the chance to write music for one of the most celebrated Greek dramas. His excitement and commitment were evident in his acceptance letter sent to Clara Godwin who had invited him to consider this commission.

Paris, 19 December 1965.

I am very happy to work at the music of ORESTEIA. One of the summits of man's spirit. The piece Agamemnon when I studied it 25 years ago caused me shock. I accepted immediately in spite of other projects that I had to do. I am sure that the final result will be of great interest. Anyway, I am doing my best.[169]

Iannis Xenakis

The original structure

Before Xenakis added *Kassandra* (1987) and *La Déesse Athéna* (1992) to the initial version of *Oresteia*, the suite consisted of three parts as in the

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[167] Claudius Ptolemy or Ptolemeus was an astronomer, music theorist, mathematician and geographer, born in Alexandria approximately in 87-150 AD. His surname indicates that he was of Greek descent, but his first name suggests an Italian connection.
[168] BNF (Bibliothèque Nationale de France), Musique: archives Xenakis. The correspondence was in Greek and the free translation is mine.
[169] BNF, Musique: archives Xenakis.

Greek play: *Agamemnon*, *Choephores* (The Libation Bearers), and *Eumenides* (The Furies). The solo sections, *Kassandra* and *La Déesse Athéna*, are passages taken from the other parts of *Oresteia*:

Aeschylus's Oresteia	**Xenakis's Oresteia**
a) Agamemnon	a) Agamemnon Kassandra (scene from Agamemnon) Agamemnon (continued)
b) Choefores	b) Choefores
c) Eumenides	c) Eumenides Goddess Athena (scene from Eumenides) Eumenides (continued)

In *Agamemnon*, the first part of the trilogy, Cassandra has a *stichomythic*[170] interaction with the chorus and from lines 1036-1330, she enjoys a lengthy monologue known as the 'Cassandra scene'. Xenakis wished to add this part separately in 1987 and as he indicated on the score it should be following the bar 296 from *Agamemnon*'s score. After this insertion the music continues with the line 1331, but without the word which is the first line after Cassandra's part. *La Déesse Athéna* was the second solo piece for baritone written five years later and according to the Xenakis's instructions should be added after bar 205 in *Eumenides*. In Aeschylus's text the goddess

[170] *Stichomythia* is a term used in the Greek theatre and it refers to alternating lines of verse – quick and intense dialogue – between two characters in ancient Greek drama.

Athena delivers 'a lengthy proclamation'[171] from lines 682 to 710, which has a weighty significance for the turn of the play.[172]

Science and classical Greece

Thanks to the commission at the festival in Michigan, Xenakis created one of his most interesting music dramas. However, we should not undervalue the fact that before composing *Oresteia* he had previously been working on two other dramas including *Polla Ta Dhina* (1962) and *Hiketides* (1964) by Sophocles and Aeschylus respectively. Therefore, Xenakis had already some previous experience in writing music for ancient plays, which this time helped him to write a deeply ritual music not paralleled in his earlier works. Despite working in Schaeffer's electroacoustic studio (*Groupe de Recherches Musicales*) from 1957 to 1962, he never lost the vision of his personal fascination with ancient Greece and alongside the electronic works and his intensive music research there, and later in both EMAMu and CEMAMu, Xenakis produced a good number of stage works throughout his life. During the sixties he accepted the challenge of various compositional styles, writing persuasive music for computers and rigorously stochastic works *ST/4, ST/10, ST/48* (1956-1962), imaginative electronic music (*Bohor* 1962), the impressive *Terretektorh* for orchestra (1965-6), dexteric solo cello music (*Nomos Alpha*, 1966), the drama *Medea* in Latin by Seneca (1967), ballet music (*Kraanerg* 1968-9), the famous *Persephassa* (1969) for six percussionists, and other less celebrated works.

Among those works, *Oresteia* stands in the middle of a productive and experimental decade. But would it be possible and realistic for a composer to trace back and reconstruct the music from ancient civilisations when it is

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[171] D. J.Conacher, *Aeschylus' Oresteia: A Literary Translation* (Toronto: University of Toronto, 1987) 162.

[172] The score of *Oresteia* is published by Boosey & Hawkes while both the additions of *Kassandra* and *La Déesse Athéna* are published from Salabert editions as separate scores.

so poorly documented?[173] John G. Landels writes there is much dispute about the number of the musical scores written in antiquity. Here the author analyses the Delphic paeans, the earliest pieces survived up to now, and the latest Christian hymn preserved to our days with a Greek musical score. From papyrus fragments, we have inherited Euripide's *Orestes*. He observes that 'the notation signs were carved above the syllable of the text, but there is a difference from modern notation in that if a series of syllables were on the same note, the sign was not repeated, but remained in force until the text sign indicated a change of pitch'.[174] Landel's analysis includes mainly the variant applications of tetrachords as seen on the surviving scores and the notation in relation to the text.

But how can the theoretical research and personal excitement be translated into accomplished sounds? Who could guarantee the validity of the final result both aesthetic and musical, and to what extent is this necessary? Although a good number of Greek writings have survived since the ancient times, musical notation as used in contemporaneous compositions has not been adequately documented. We only possess a limited number of musical fragments and these came mostly from dramatic plays. There is the view that most music was lost as it was not written down, but entrusted in the memory of the listeners. The fact that vocal and instrumental teaching was also aural did not help to preserve the Greek musical tradition. Thus because of the survival of literary texts, we know more about socio-cultural aspects of the Greek music, especially as used in education, and very little concerning the actual sound of it.

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[173] A classic book regarding the music of Ancient Greece is M. L. West, *Ancient Greek music* (Oxford: Clarendon Press, 1992). See also Giovanni Comotti, *Music in Greek and Roman Culture*, trans. Rosaria V. Munson (Baltimore and London: The John Hopkins University Press, 1989). A very interesting and recently published book is that of John G. Landels, *Music in Ancient Greece and Rome* (London: Routledge, 1999) where in the last chapter the author discusses some of the surviving scores.
[174] Landels, *Music in Ancient Greece and Rome*, 224.

'Antiquity and Contemporary Music'

At the time Xenakis was finishing *Oresteia*, he published the essay 'Antiquity and contemporary music' where he discusses succinctly his thoughts about the musical logic behind the reconstruction of ancient sounds. He depicts and explains a wide range of issues either on a purely theoretical level or a technical one. It is apparent from the text that Xenakis's primary consideration is to research alternative ways of writing music for Greek dramas, but no explanation is given regarding the 'acoustical aesthetics of antiquity'. How can these be known?

> The ancient drama cannot possibly be expressed with tonal or atonal music like serialism. This kind of music is typical of another epoch. On top of this, the acoustical aesthetics of antiquity is at odds with the sonorous atmosphere of Wagner, Schoenberg and their successors.[175]

As an essayist, Xenakis occupied himself with various topics ranging from mathematics and architecture to pure musical and cultural subjects. Among the most famous essays of Xenakis are: 'La crise de la musique serielle' in *Gravesanner Blätter* (1955) and 'Notes sur un geste electronique' in *Revue Musicale* 244 (1959), an article written directly under the influence of the music played in the Philips Pavillion concerning the fusion of arts and technology. In 'La voie de la recherche et de la question' in *Preuves* (1965), the composer talks of the 'theory of groups' as used in his compositions *Nomos Alpha*, *Nomos Gamma* and *Akrata*. The essay 'La ville cosmique' in Francoise Choay's *L'urbanisme utopies et realites* (1965) is about Xenakis's utopian vision for the existence of a vertical city, which could be five kilometres in height. In this essay Xenakis claims that only in big cities can there be cultural and technological development, but without explaining the reasons for such development. In 'Scientific thought and music' a speech delivered by Xenakis in the Greek National Opera House (1975), the composer talks of his initial steps as a composer to built universal structures through the use of mathematics. In 'Culture et Créativité' in *Cultures* (1976) Xenakis, once again, place emphasis on the necessity of the marriage

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[175] Xenakis, *Essays in Music and Architecture*, 107-108.

between music and science while in 'Entre Charybde et Scylla' in *Spirale* 1 (1981), he talks about the concept of 'repetition' in music. In 'Musique et originalité' in *Phréatiques* (1984), as the title suggests, is about the notion of originality in music and in 'Sur la temps' in *Redecouvrir le temps,* (1988), Xenakis elaborates his ideas about the close relationship between time, music, and space. Thus the variety of his compositional works are often backed up with theoretical writings, discussing most of Xenakis's intellectual interests.

a) Total theatre

In the essay 'Antiquity and Contemporary music' the author starts off with a definition of Greek theatre as 'total theatre' in the sense of a total experience (like the Wagnerian *Gesamtkunstwerk*) which is not confined to the senses of hearing or vision, but also takes place in the sphere of thought.[176] In the same essay the composer specifies seven functions used in his music: a) the song or the intonation of the human voice (line 152 in *Choefores* – 'Pour forth tears, falling loudly, for our fallen lord'), b) the support of speech (line 1468 in *Agamemnon* – 'Oh spirit that falls upon this house, on Menelaus, on Agamemnon, descendants of Tantalus, you overpower me'), c)sonic commentary (the murder of Agamemnon), d) objects of worship (exorcism of Elektra's and Orestes's slaves in *Choefores*), e) support of dancing (lines 140 onwards in *Eumenides* – 'Awake! Wake her, as I wake thee'), f) symbolism of events (wedding fanfare of Agamemnon), and g) noises pertaining to music (i.e. Clytemnestra's music). Although Xenakis makes these comments exclusively for this work, he also draws attention to the Japanese *Noh* theatre. He believes that the latter has been a continuous tradition approximately since the 13th century. In contrast, the Greek tradition, although somehow preserved during the Byzantium years, ceased to exist when Greece was under Turkish occupation for four hundred

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[176] Xenakis, *Essays on Music and Architecture,* 105. Here Xenakis follows the Hegelian approach 'there is nothing in the sense experience that has not been in the intellect' that reverses Aristotle's words, 'there is nothing in the intellect that has not been sense experience.' See Isobel Armstrong, *The Radical Aesthetic* (London: Blackwell Publishers, 2000) 72.

years.[177] Xenakis writes that all the elements of the Japanese theatre, like poetry, treatment of the voice, dancing, music, colours and their various symbolisations are organically unified, undivided, and original. It therefore could serve as a model for the advancement of stage direction. Xenakis's enthusiasm and admiration for the *Noh* theatre is quite apparent in this essay (see also the interview with Françoise Xenakis at the end of the thesis), but unfortunately, he does not elaborate any further to explain specifically *how* all these elements are original and unified in the music of the *Noh* theatre. Such a discussion would be very useful, if not necessary, to the reader. Concluding the first section of the essay, Xenakis explains that in *Hiketides* the dancers are carrying musical instruments on them in order to give mobility to sound (part of the physical movements and gestures), which in large numbers give an opportunity for stochastic music.

b) Outside-time structures

In the second half of the essay, Xenakis confronts the problem of the music itself composed for ancient plays. Here the composer deals with the question of structure and technique. He speaks of the notions of 'outside-time' and 'in-time' structures, which constitute the backbone of his argument in this essay.

> We must distinguish two natures: 'in-time' and 'outside-time'. What can be thought of not undergoing change is 'outside-time'. Traditional modes are partially 'outside-time', logical operations or relationships imposed on classes of sounds, intervals, characters etc., are also 'outside-time'. As soon as the discourse contains the before or the after, we are 'in-time'. A serial order is 'in-time', as is a traditional melody. Any music, in its 'outside-time' nature, can be instantaneously delivered, outright. Its 'in-time' nature is the relationship of its 'outside-time' nature with time. As sonorous reality, there is no pure 'outside-time' music; only pure 'in-time' music exists – that is the rhythm in its pure state.'[178]

In her dissertation, Sward Rosalie La Grow writes that Xenakis's reference to those terms in relation to the idea of order are contradictory. She states: 'As soon as there is a before and after there is an order. The major scale is ordered by convention while the 12-tone row is ordered to the desires of the

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[177] Xenakis, *Essays on Music and Architecture*, 107.
[178] Xenakis, *Essay in Music and Architecture*, 86.

composer. Thus it is somewhat difficult to see the fine line between the two categories of Outside-of-Time and In-Time as explained by Xenakis.'[179] I argue that these ideas are not contradictory, but essentially different. It is worth mentioning that on the same page the author misquotes Xenakis, writing that the traditional modes are 'outside-time', while the correct quotation is that modes are *partially* 'outside-time'. If we accept the distinction based on the order it is essential that this inaccuracy is being pointed out and not disregarded.

As far as these terms are concerned, Xenakis deals with three aspects of music. First, the relationship with time; second, the question of order; and third, the notion of causality. The idea of causality for instance can be related to a serial order. On a general level, any structure which is independent of time should be regarded as 'outside-time' structure. When it is applied in a musical context there is a necessary submission to time and therefore it belongs to 'in-time' structure. By writing that 'as sonorous reality, there is no pure ''outside-time'' music', Xenakis means that there is always an implied relationship between time and music. Hence, 'logical operations' which are delivered through sound have an automatic relationship with time. Modes belong to both categories. This view can be explained with the question of order. When there is order by convention as happens with non-Western, Greek scales and tetrachords, and also in the major scale, music has an 'outside-time' structure. Given this distinction by order we also understand why Xenakis classified modes in both categories.

Outside-time structure	**In-time structure**
Greek scales	Traditional melody
Byzantine Music	Serial music
Non-Western systems	
Major scale	

Outside and In-time
Traditional Modes

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[179] Rosalie Sward la Grow, 'A Comparison of the Techniques of Stochastic and Serial Composition Based on a Study of the Theories and Selected Compositions of Iannis Xenakis and Milton Babbitt' 293.

All these considerations regarding 'systems', 'order', 'in time' and 'outside-time' structures were born out of the necessity to think afresh about what kind of music is suitable for the ancient drama, but it is very likely that the essay in question might have been another theoretical fight against serialism and tonal music. Xenakis coined the terms 'en temps – hors temps' and theorised a great deal about them, acknowledging their existence in the course of centuries in ancient, medieval, oriental, and African music.

> Ancient music, as Aristoxenus Tarantum[180] describes, involves an 'outside-time' structure as a kind of combination of the three tetrachord genuses (diatonic, harmonic, and enharmonic) based on a tempered scale [...] Modern music, even the most advanced, only involves a poor 'outside-time' structure [...] the only solution is to revise it and make it more effective.[181]

Hence, although the idea of structures 'outside-time' was not new, Xenakis made use of it as a referential value in combination with modern techniques to accomplish 'abstract re-establishment' through theoretical logic and mathematics. His stochastic music and the theory of 'sieves' were the musical correlation of the 'outside-time' structures in Xenakis's compositions.[182] The theory of 'sieves' was a kind of a scale system applied not only to pitch, but also to other musical parameters, such as intensity and duration. The resulting music in that case is not based on sequential ordering and it thus belongs to the 'outside-time' category. Likewise, because of the indeterministic nature of stochastic music (probabilities) the musical material exists in 'outside-time' structures.[183] Xenakis only refers to Debussy and Messiaen's music, which proclaimed something different in relation to scales and intervals and discounted the importance of major and minor relations. He believes that Debussy's music was closest to what he

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[180] Greek philosopher (born c. 375-360 B.C, died ?) from Tarantum (South of Italy), who lived most if his life in Athens. Initially he was a discipline of Pythagoras whom he later denounced and also a pupil of Aristotle who exercised a great influence on his writings. He was 'the first musical theorist to insist on the necessity of training the ear to make hearing more precise'. See Annie Belis 'Aristoxenus' *Grove Music Online* ed. L.Macy (Accessed 2 February, 2004) http://www.grovemusic.com.

[181] Xenakis, *Essays in Music and Architecture*, 109-110.

[182] The theory of sieves and how it works involves advanced mathematics and it will not be discussed here.

[183] For a detailed discussion of Xenakis's stochastic music with references to 'outside' and 'inside' time structures, see Stephen A. Joseph, *The Stochastic Music of Iannis Xenakis: An Examination of his Theory and Practice*, (Ph. D., New York University, undated).

was searching for, while with Messiaen's discoveries he was impressed that despite his traditional training he managed to create something new.[184] Hence from this basis and Messiaen's techniques, Xenakis developed further the idea of scales on a more general level. Unfortunately, there are no specific examples of other musical cultures, which have applied 'outside-time' structures in their music, whether modern or ancient. Xenakis greatly defended this idea of such structures in most of his writings. However, his reference to this concept is limited to a theoretical suggestion that 'outside-time' systems could lead to a less 'westernised' approach in music of ancient plays.

c) Tradition and creativity

In the light of these considerations and towards the end of his essay, Xenakis specifies that the musical approach to the vocal parts in *Oresteia*, especially that of women, was made through the investigation of such concepts and ideas. As referred in the introduction of the thesis, ten years later the composer returned to the same subject with his article 'Cultural tradition and creativity', where he emphasises the fusion between past and future and also the necessity and benefits of studying and applying other musical systems to the process of composition. For Xenakis the music of a lost tradition can be recovered only through the serious research and reflection of contemporary thought. The two essays clearly demonstrate his certainty that the escape from the traditional context of contemporary music and the limitations of western culture is only feasible through intellectual openness. As he writes, it is absolute necessary if there is to be a mutual cultural penetration, which would enable people to come closer to other cultural traditions either through conservatoire teaching or through the media.

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[184] See Varga, *Conversations*, 52.

Hellenism and other composers

Xenakis was not of course the first composer or theorist to be interested in Greek music and the revival of ancient drama. Girolamo Mei (1519-1594)[185] and Vincenzo Galilei (1520?-1591)[186] are two Renaissance figures who displayed a profound interest in the Greek modes and music theory. Galilei 'embarked on a programme to correct the modern theory and practice through the examples of the ancients.'[187] Xenakis's ideas about Greek systems and structures seem to recover the historical context of Renaissance's musical thought and specifically that of the Florentine Camerata, which attempted to revive the ancient Greek drama. Xenakis and Galilei showed an appreciation of the Hellenic world, whose culture and music could benefit their time and practices. In both cases, the reference to Greek music was seen as the right source for 'correcting' the musical thinking of the period in which they lived.

In the romantic era, Richard Wagner was another ardent Hellenophile although he never applied a Greek topic in his dramas. His admiration for the culture of ancient Greece was on a more theoretical and philosophical level. However, similarities have been drawn between *The Ring* and the classical play *Oresteia*. Wagner was more interested in the notion of Greek theatre as a 'total art' and he never concerned with the practical nature of ancient music nor with its revival as were Renaissance musicians and Xenakis. In the twentieth century the towering figure of Igor Stravinsky (1882-1971) was also displayed this, leaning towards Hellenism and Greek subjects. His opera-oratorio *Oedipus Rex* (1926-7), the ballet *Apollon Musagète* (1927-8) and the melodrama *Persephone* (1933-4) are typical

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[185] Florentine humanist immensely interested in classical Greece. He was editor of ancient texts and researcher of Greek music for which he wrote the famous treatise *De modis* between 1566-1573.

[186] Italian composer and theorist from Tuscany, greatly influenced by Mei's ideas regarding ancient Greek music.

[187] Claude V. Palisca: 'Galilei, Vincenzo', *Grove Music Online* ed. L. Macy (Accessed 22 January, 2004), <http://www.grovemusic.com> In one of his letter to Galilei, Mei wrote: 'As to the marvellous effects of the music of the ancients in moving the affections and not finding any trace of this in modern. . .our music does not have the same goal.' See *Source Readings in Music History*, ed. Oliver Strunk (New York and London: W.W.Norton & Company, 1978), 207-216.

examples of Stravinsky's interest in the Classical world. The comparison with Stravinsky's *Oedipus* comes naturally to the fore when discussing Xenakis's *Oresteia*.[188] Both works share the same dramatic grandeur through the power of the text. However, Stravinsky deliberately favoured a Latin setting for *Oedipus*: 'For some time now I have been pursued by the idea of composing an opera in Latin on the subject of a tragedy of the ancient world,' he wrote to Cocteau.[189] Thus the poetic significance is different in each case. As Stephen Walsh explains, Stravinsky may have had in the back of his mind Verdi's *Requiem*, also based on a Latin text in the manner of a Catholic Mass. Both Stravinsky and Xenakis came from counties where the official religious was that of the Orthodox Church. Xenakis was an atheist, but became influenced by the Byzantine music which is rooted in the ancient Greek scales. Stravinsky came from a family antipathetic to Orthodoxy, but in 1926 he decided to return officially to his native faith.[190] The choice of the language not only indicated a personal preference for Stravinsky, but also a religious response.[191] Xenakis opted for the original text in *Oresteia* combining the natural music of the Greek poetry with his own sounds. The Greek text is an important aspect of the rhetoric and dramaturgy of his music. The selection of the texts was based on the natural sound of the words, not on their meaning, as most of the time Xenakis wanted to avoid narrating a story. For this reason the majority of his texts were either phonemic or ancient Greek.[192] With the use of a narrator in *Oedipus Rex*, Stravinsky was evidently not interested in this principle. In relation to the text, he gave emphasis to the rhythmical aspect of the Latin language derived from its syllabic character, while Xenakis considered the prosodic aspect of the Greek text and its, natural, melodic, and rhythmic flow. Maureen Carr writes that Stravinsky's 'syllabification of

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[188] Matossian mentions Stravinsky's *Oedipus* in her chapter 'Total Theatre'. See *Xenakis* (London: Kahn and Averill, 1986), 198. Robert Fajond in his article 'Oresteia at Mycenae' mentions that Stravinsky's aesthetics was an antipode to Xenakis's aesthetics. See *Iannis Xenakis* (Athens, 1994) 71.

[189] Stephen Walsh, *The Music of Stravinsky* (Oxford: Clarendon Press, 1993) 136.

[190] Walsh, *The Music of Stravinsky*, 136. See also his book, *Stravinsky: Oedipus Rex* (Cambridge: Cambridge University Press 1993) 4.

[191] Walsh writes when *Oedipus Rex* was composed, Stravinsky was in his most strict and earnest period of Christian Orthodoxy. See *The Music of Stravinsky*, 134.

[192] Of course, as noted in the introduction of the thesis, Xenakis was able to read and understand the ancient Greek texts from a very young age.

the Latin text for *Oedipus Rex* relates to the scansion technique that he applied to the Russian text found on the first page of the sketchbook.' She continues writing: 'there will also be examples that show how Stravinsky sometimes disregarded his initial versification or analysis of the text when transferring his scansion patterns into a melodic context.'[193] As far as the music is concerned, Stravinsky's *Oedipus* belongs to his neo-classical works, clearly centered on a tonal language, while Xenakis, as stated above, would never consider writing tonal or serial music for an ancient drama.

Aeschylus's play

a) Agamemnon

While Xenakis's *Oresteia* reflects the composer's most successful attempt to write music for a Greek tragedy,[194] the play itself is said to be Aeschylus's most significant drama.[195] It is his sole work to have survived as a trilogy among the eighty plays he wrote, although only seven have come down to us: *Persians*, *Seven against Thebes, Suppliants*, *Prometheus Bound* and the trilogy of *Oresteia*. Most of them bear an Athenian topic. Aeschylus's major contribution to the Greek theatre was the heightening of the dramatic feeling in a play. This was achieved by the introduction of a second main actor (deuteragonist) and consequently the direct interaction of two people as *stichomythia.* Therefore, the role and the parts of the chorus were diminished in favour of a more dramatic style through dialogue.[196] *Oresteia* as a play displays characteristics of a typical Greek tragedy, such

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[193] See Maureen A. Carr, *Multiple Masks: Neoclassicism in Stravinsky's Works on Greek subjects* (Lincoln and London: University of Nebraska Press, 2002), pp. 23 and 32 respectively.

[194] Tragedy literally means the 'song of goats' from *Tragos* (goat) and *Ode* (song). *Tragodoi* were the satyrs half men, half goats who were performing the song. It is ambiguous how the word in question is related to the Greek theatre. Aeschylus was born in 525/4 BC in Eleusis, near Athens and died in 456/5 at Gela in Sicily. Together with Sophocles (497/6-406/5) and Euripides (c485-406) was the most significant tragic poets in Classical Greece. He was fortunate to witness Athens's golden age of democracy and culture. See Bernhard Zimmermann *Greek Tragedy*, trans. Thomas Marier (London, Baltimore: The Johns Hopkins University Press, 1991) 26-29.

[195] For a comprehensive account of *Oresteia* see the introduction of Christopher Collard in *Aeschylus: Oresteia* (Oxford: Oxford University Press, 2002).

[196] See John Herrington, *Aeschylus* (London and New Heaven: Yale University Press, 1986) 41.

as a hereditary curse, moral conflicts, tension, human destiny and divine power, revenge[197], politics, and the triumph of justice. The Aristotelian concept of *catharsis*[198] (resolution) is the principal objective of each tragedy as a purging feeling from all the emotional tension created throughout the play. Aristotle's threatre is based on the principle that the audience should emotionally participate in the events of a tragic play by developing feelings of fear and pity. When the tragedy is completed, usually after an emotional crescendo, the judicial resolution that often ends the tragedy leads to emotional cleansing (catharsis).

If we wish to follow the chain of events occurring in *Oresteia*, it would be wise to know in advance the mythic background of the story and how it is linked to the plot of the trilogy. The opening lines of *Agamemnon* narrate the cursed history of the House of Atreus so that the audience will be able to understand the plot of the trilogy. *Oresteia*'s continuous strength is directly connected to the myth of the Trojan war and the House of Atreus (an extremely ill-fated family saga, involving murders, curses, adultery and wars). The Trojan war, which took place in Troy of Asia Minor between the Greeks and the Trojans, is the most well-known conflict in the Greek mythology and a recurring inspiring theme for the plays of that time. The myth says that Paris (a Trojan prince), helped by Aphrodite to abduct Helen, the wife of Menelaus from Sparta, who according to the legend followed Paris voluntary. After this happened, they ran off to Troy to get married, but Menelaus decided to take revenge for his wife's capture and thus he shipped to Troy to take her back. The war lasted ten years and the Greeks finally won and Paris was killed. Agamemnon, Menelaus's brother, was selected to be the leader of the Greek forces which, when they reached Aulis in Thrace, were stranded by terrible weather conditions. The goddess Artemis advised Agamemnon that he had to sacrifice a human virgin if he wanted to rescue his soldiers. Agamemnon was left with no choice, but to sacrifice his daughter Iphigenia, who was the only virgin available there and continue

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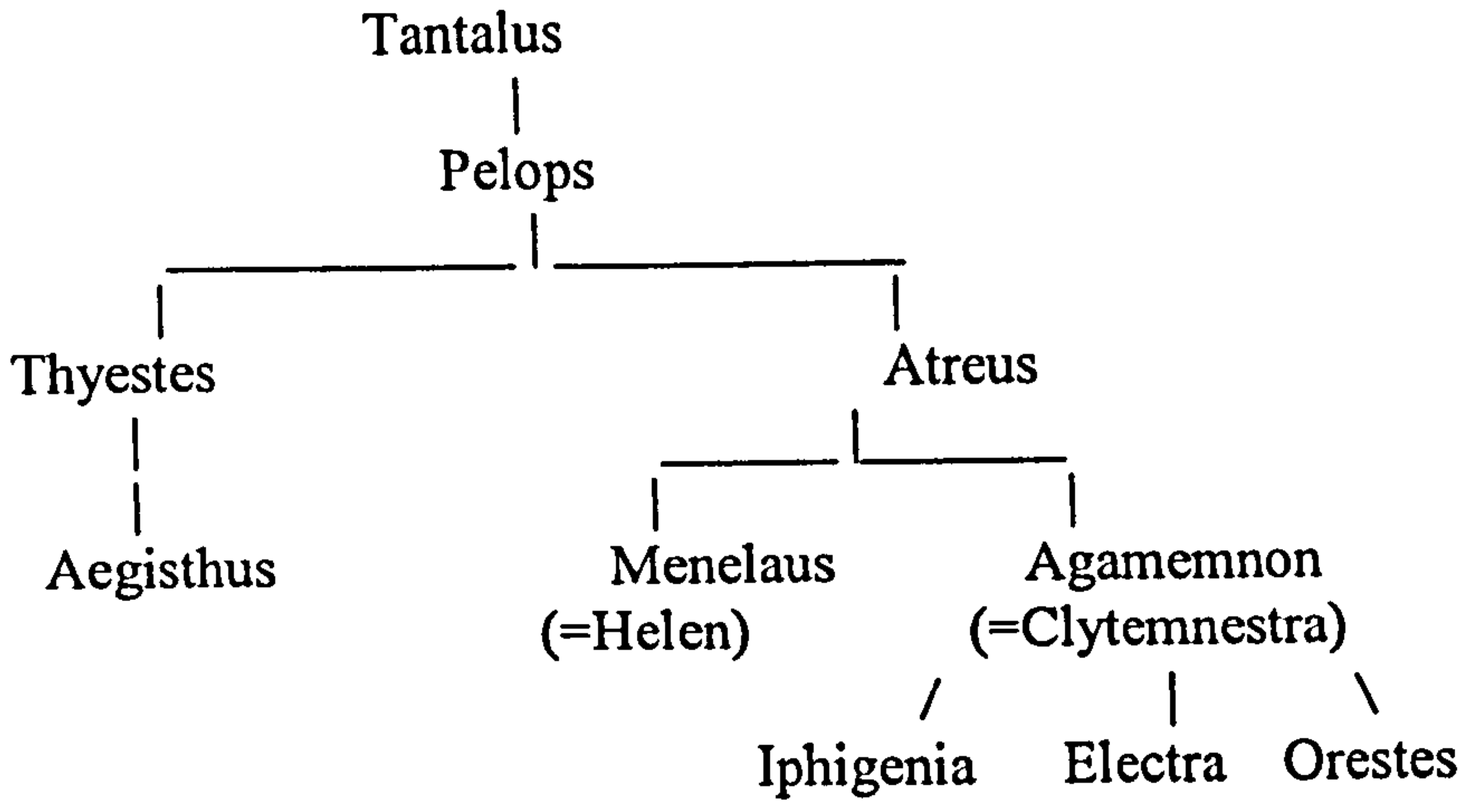
[197] The subject of 'revenge' is a favourite operatic topic especially in the 19th century music theatre. Perhaps the most notable examples are Wagner's operas in *Lohengrin*, *Tristan und Isolde* and *The Ring* with Telramund, Melot, and Alberich respectively.
[198] From the Greek word *Kathairein*, to cleanse, purge.

their journey to Troy. Thus the beginning of the trilogy is a smooth sequence from the close of this war and the triumphant return of Agamemnon to Mycenae.

Family Tree[199]



In Aeschylus's *Oresteia*, the first part (*Agamemnon*) starts 'in the middle of the things with the family's story well-advanced. . .' and with 'instant tension'.[200] The two protagonists here are Agamemnon and his wife Clytemnestra who is vengefully waiting for her husband's return from Troy, plotting his fatal punishment for his actions. The sacrifice of their daughter Iphigenia at Aulis before the Trojan war by Agamemnon, his long-term absence, and finally his return with the Trojan Cassandra as his captured mistress are the reasons for Clytemnestra's homicidal mood. The question whether Agamemnon had the right to sacrifice his only daughter in order to rescue his soldiers and comply with Artemis's instructions has inspired repeated moral arguments, but surely moral dilemmas and choices lay at the

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[199] Tantalus was the son of Zeus and father of Pelops who had two sons, Thyestes and Atreus. Thyestes had an affair with Atreus's wife Aerope and for this reason the latter killed Thyestes's sons. After this, Thyestes put a curse on the House. The myth says that Thyestes had also a son, Aegisthus from his daughter Pelopia. The sons of Atreus, Menelaos and Agamemnon married Clytemnestra and Helen respectively. When they were in Troy fighting, Aegisthus become the lover of Clytemnestra who had three children, Iphigenia, Orestes and Electra.

[200] Collard, *Aeschylus: Oresteia*, xxiii.

heart of the tragic plays. Clytemnestra's barbaric response to Agamemnon's actions stems from a moral duty to avenge her daughter's death although 'she glosses over her adultery with Aegisthus as best she can in front of the chorus.'[201] It is a predominantly bloodthirsty section, with the two cruel slaughters of Agamemnon and Cassandra to confirm the native ethos of the classical theatre and at the same time to suggest a strong sense of female dominance, not unusual in Greek tragedy.[202] Both murders are conducted in the palace (House of Atreus) with the assistance of Clytemnestra's lover, Aegisthus, who seeks to quench his own thirst for revenge for his father's death. The first part ends with Clytemnestra's temporary victory and the chorus's prognostication that Agamemnon's son, Orestes, will shortly take vengeance on his paternal homicide. With Agamemnon's and Cassandra's deaths the Atreus saga is not completed but it remains as an open wound.

b) Choefores

The second part, *Choefores* (Libations Bearers), takes its name from the libations left on Agamemnon's grave by Orestes's sister, Electra, and some slave women (chorus). Clytemnestra has dreamt of her son's revenge and in order to avoid this, she offers these gifts without suspecting that her daughter and the chorus pray in favour of Orestes's plans. The latter appears to Clytemnestra as a messenger who announces her son's false death. While being alone with her, he decides to kill his mother with a sword. Before Clytemnestra dies, she warns him that he will soon be punished for his actions by Furies.[203] Orestes runs off to Delphi[204] seeking protection from Apollo[205] who had predicted and supported Orestes's murder. As had happened in *Agamemnon*, the second part is based again on the motifs of

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[201] Ibid., xxvi

[202] Euripide's *Medea* Sophocles's *Electra* and *Antigone* are also famous examples of presenting central and powerful female roles. In the case of Medea and Clytemnestra the stereotype of evil-minded women is also present.

[203] The Furies were goddesses who used to punish blood-related murders. Clytemnestra here believed that they would persecute Orestes for killing her.

[204] Delphi (meaning Dolphin in Greek) was the most famous oracle in the Classical world. It was Apollo's Temple, a spiritual place where people could go to ask his prophecy and advice on various matters. Pythia, his priestesses, was acting as Apollo's mouthpiece revealing to people his prognostications and will.

[205] Apollo is mainly known as the god of music, but he was also the god of logic and prophesy.

vengeance, fate, homicide and the commands of gods determining people's actions. Agamemnon's children seek revenge, Orestes is destined to repeat the bloody circle of Atreus's House, the homicide is now a matricide and the divine decree comes once again to rule and influence ordinary people's life.

c) <u>Eumenides</u>

The last part of the trilogy *Eumenides* takes place in two different locations. The first is Delphi, the place where Orestes went to look for Apollo, and the second one is Athens, where Athena, the goddess of wisdom and protector of the city, is going to judge and decide Orestes's fortune. Clytemnestra's prediction has come true, confirming the futility of human nature in railing against its destiny. Orestes is already surrounded by the Furies who seek justice for his mother's murder. Apollo, who protects the young matricide, helps him to escape to Athens. There, near the Areopagus hill at the Acropolis, Athena is expected to reach a verdict for him. But despite her native wisdom and experience in similar matters, she finds it hard to make a moral decision on such a serious crime. Therefore, Athena calls the residents of the city to take Orestes's fortune in their hands and to vote for him in a specially made court for this occasion. With the support of Apollo and her own vote, Orestes is released to return home, free from any ethical condemnation. The Furies (Erinyes) are defeated, but goddess Athena offers them a permanent residence in her city and also the promise that they will be respected figures in the future. For this reason they are renamed 'Eumenides' (Kindly Ones). They exert a powerful influence throughout the Oresteia on the fortunes of house of Atreus.[206]

This part of the trilogy is slightly different from the first two. It is divorced from the context of homicides and also from the absolute power of gods to determine the humans' predicament, projecting more political issues. The setting, the context, and the ethos of *Eumenides* are all strikingly different from what has preceded it. Here, Aeschylus, 'transforms the tragic

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[206] Hugh Lloyd-Jones, *The Eumenides* (Prentice Hall, 1970) 2.

inevitabilities of *Agamemnon* and *Libation Bearers* into confident hope.'[207] At the end of the play, Orestes is discharged for his mother's murder, not because it was not an abhorrent act, but because it was seen as a moral obligation for his father's slaughter. But all these concepts of morality, justice, and vengeance seem to be interlocking despite the difficulty to define and delimit them. Is 'evil for evil' a reasonable argument? Or should we let the rage pass into understanding?' No matter what the answer may be, what is important is the ability of the ancient theatre to preserve its soul at the turn of the twenty first century, dealing with subjects which are still valid in our contemporary culture. This timeless catholicity of classical Greece is what enraptured Xenakis to engage himself with its philosophy and made him write that 'the ancient theatre. . . touches people on many and dynamic levels yet unrelated.'[208]

Oresteia **as music drama**

The music

Oresteia is written for a mixed adult and children's choir and a chamber ensemble.[209] With the exception of the additional parts of *Kassandra* and *La Déesse Athéna*, which both include a baritone, the choral element predominates in all three sections (*Agamemnon, Choefores, Eumenides*). Thus initially Xenakis placed emphasis on the significance of the chorus as happens in most tragedies including the *Oresteia*. This choice could be justified by the fact that the natural music of the choral passages is the driving force in a drama. As Rosenmeyer assertively observes '. . . the most important contribution of the chorus is that of music. The principal instrument guaranteeing the musical nature of Greek tragedy, if not its birth from the spirit of music.'[210] The solo movements which Xenakis added

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[207] Collard, *Aeschylus: Oresteia*, xlii.
[208] Xenakis, *Essays on Music and Architecture*, 106.
[209] As written on the score, the final version of Oresteia, which include the latest addition of *Kassandra* and *La Déesse Athéna*, is extracted from the staged version as premiered in Michigan. The choruses consist of 18 baritones, 18 contraltos and 20 children's voices.
[210] Rosenmeyer G. Thomas, *The Art of Aeschylus* (Berkeley: University of California, 1982) 146.

much later, including the figures of Cassandra and the goddess Athena, enriched the dramaturgy of his trilogy. With the choral passages Xenakis achieves a dynamic and ritual effect while with the solo music he expresses richness of feelings. In the first case, the use of chorus represents a whole community which, although it influences the audience, does not influence the development and the action of the tragedy. Hence the music may be expected to reflect this communal feeling detached from any excess of individual pathos. On the contrary, specific characters, whether humans or gods, express views, ideas, or certain events which can shape the plot of a play and therefore the music is likely to indicate a more personal idiom. But before we look at Xenakis's choral treatment in *Oresteia*, let us first examine the function and the role of the chorus in ancient tragedies.[211]

Although there is a common framework regarding the role of the ancient chorus, there is no archetypal, identical pattern for all plays. Its function is different each time depending on the time, the objective, the plot, and the author of the tragedy. Even among plays by the same author, there are different approaches to the chorus's treatment. The typical structure of a Greek tragedy is: *prologue*, a lengthy speech before the chorus's entrance; *parodos*, where the chorus sing, dance or chant after its entrance; *episodes*, the spoken parts between the chorus's songs; *stasima*, a song by the chorus and final *exodos*, the exit and final section of the tragedy. Perhaps the most important function of the chorus is to begin the drama.[212] The chorus members, usually twelve or even fifteen male, amateur singers, enter from the side roads, which called *parodoi*. While in the *orchestra*, which is the main place of the theatre, they either share a lyric passage with one of the dramatic characters – that is the *kommos* – or dance and sing a lyric passage themselves.[213] On some occasions, there is also the figure of *coryfaeus*,[214] the leader of the chorus who normally represents it and converses with the main actor. This interaction, often dialogic in nature, happens either

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[211] In Rosenmeyer's book, the author devotes a whole chapter on the role of chorus in the Aeschylean tragedy.
[212] Rush Rehm, *Greek Tragic Theatre* (London and New York, 1992) 56.
[213] Ibid., 57. The authors of ancient tragedies were at the same time both choreographers and composers, writing music for the chorus. See also p.26.
[214] From Greek *koryphaeus*, from *korufe*, head.

between the two main actors or between the *coryfaeus* and another character. Xenakis used it in Oresteia but mainly in *Kassandra*, where the *stichomythic* interaction was particularly intense, lending a different dramatic aspect to the music.

Although the chorus has an organic role in the tragedy, it does not really have a leading or a decisively leading role in the dramatic development of it, as the latter is pursued by the action of the individuals. But there are again exceptions to this rule. Sometimes the choral singing is what produces the overtones and the tensions which help to determine our sense that we are dealing with a tragedy.[215] The chorus represents the community of a city and therefore life's wisdom and objective morality in relation to the excess of human passions. This communal voice represents the mind of the author, who uses it as an indirect way to express his own views on various political, social, and moral issues.[216] But at the end the ultimate role of the chorus is to comment on the action itself and to provide useful information for the audience. Hence, its usefulness is above all psychological and the audience recognises in it an institutionalised part of itself.[217] In Aeschylean drama in particular, the chorus's role is more pronounced, reflecting a sense of crowd which could be involved seriously in the development of the action, being a 'full-fledged participant'[218] in it, but again with certain limitations with regard to its achievements. For the *Oresteia* in particular Rosenmeyer suggests that the chorus 'is a critical commonplace' and that it 'advances the development not only of the dramatic themes, but of the action...'[219]

In the concert version of *Oresteia*, Xenakis made very selective use of the original text. In the first part of *Agamemnon*, especially the passage before *Kassandra's* addition, words are merged with the instrumental sounds of timpani and trumpets and the dramatic tension achieved by both voices and instruments. The composer chooses very carefully the lines he wishes to use

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[215] Rosenmeyer, *The Art of Aeschylus*, 149.
[216] Ibid., 167.
[217] Ibid.,145.
[218] Ibid.,163.
[219] Ibid.,150

from the Greek text, disregarding even their chronological continuity. The text is sometimes fragmentary, but the singing sounds fluid as the music, permitting certain emotional outbursts from the choir. In the first part of Xenakis's *Agamemnon*, (before Cassandra's singing), the composer selected verses from *strophes* (turn) and *antistrophes* (counter-turn) which are the stanzas sung by the chorus while moving on the stage. These two, together with *epode* (final song), are part of the *parodos* (entry from the side road). The choir used to sing and dance in each *strophe*, *antistrophe* and *epode* and to chant in the *parodos*. For the music of *Agamemnon*, Xenakis used lines from *strophes* and *antristrophes*.[220] Furthermore, and this is perhaps unusual, he indicated specific verses when there is only instrumental music.

a) Agamemnon

The first ode sung in Xenakis's *Oresteia* conjures up the spirit governing the House of Atreus. Sorrow and lament frame the beginning and the development of the trilogy, excellently summed up in the phrase 'sing sorrow, sorrow, but may the good prevail,' in line 121, and also in 159, each time coming at the end of the stanza (Example 2.1, first system). As Lloyd-Jones explains, 'the refrain is a feature of the most primitive poetry. . .and one of the many features of the choruses of these plays.'[221] Thus Xenakis's music is certainly based on literary concerns alongside the musical effect of the original text. The line in question is first used in bars 18-23 and then repeated unaltered in bars 36-41, but the composer repeats the idea of grief as the prevailing theme with the lines 228 ('And her prayers and cries of 'Father'), 252 ('But all is one if we lament before'), 430 ('a mourning woman, one that suffered much') and 1031 ('full of sad thoughts and having no hope'). Xenakis shows a consistency with the emotional concepts in *Agamemnon*, modelling his music on ideas and feelings expressed in the play. The third choral ode, in lines (975-1034) has been described as a 'song of fear' preceding Cassandra's frightening prophesy. Here Xenakis denies the emotional power of the text and he instead resorts to a musical

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[220] *Strophes* I (verse 121), II (160), III (176), V (218) and *antistrophe* V (228) and VI (252) and later from *strophes* I (688) and (681), *anstistrophe* II (430), *strophe* III (452), *antistrophe* III (456), (462) and (470) and finally *antistrophe* II (1019) and (1034). 237 976

[221] Hugh Lloyd-Jones *Agamemnon* (Prentice Hall, 1970) 24.

commentary of the lines 1000-1034 (Example 2.2). After the entry of the chorus, the composer uses the figure of *coryfaeus* to sing the lines, calling upon Zeus's name, although in the text these lines are sung by the whole chorus.

A comparison with the second part of *Agamemnon*, which takes place after the Cassandra scene, shows that Xenakis adopted the change of mood and events in the play in his own composition. He is fully aware of the shifting relationships between characters and situations after Agamemnon's and Cassandra's capture and of the eventual murders. This time he only selects two passages from the original text: Agamemnon's desperate, offstage cry[222] just before his own slaughter ('Oh, I am struck deep with a mortal blow', line 1343) and the whole refrain sung by the chorus after the first *strophe* and the second *antistrophe* (1513-1520).

> Oh my king, my king, how I shall weep for you?[223]
> What word shall I utter from a loving heart?
> And you lie in this spider's web,
> gasping out your life in an impious death
> alas, on this shameful bed
> brought low by a guileful death,
> by a two-edged weapon sped by [your wife's] hand.

As happened in the first part of *Agamemnon*, Xenakis indicates other stanzas without quoting the actual words. The effect of the unwritten words is mirrored in the instrumental passages throughout the composition. The choral passages here have a more active implication than in the first part, acting independently, almost unhelped by the music. After Agamemnon's death the shift in mood is governed by the transition from anticipation for the forthcoming murders to the emotional aftermath when everything is completed. Xenakis deftly divides the two parts by Cassandra's prophetic

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[222] In the Greek theatre, murders and other abhorrent acts usually take place off stage, but as Rehm writes 'physical pain, brutality, and even bloodshed do occur in within the sight of audience'. For instance the suicide scene in Sophocles *Ajax* or the death of a son in Euripides' *Hippolytus*. See *Greek Tragic Theatre* p62. In the Aeschylean drama, however, such scenes occurred off-stage.

[223] The chorus consists of the old men of Argos, who once declared their support to Agamemnon and it is now only natural that they weep for the loss of their King. See D.J.Conacher, *Aeschylus' Oresteia*, 48.

delirium, which is the latest addition of his *Kassandra*, as it indicates a turning point in the play and prepares us for Clytemnestra's performance and accomplishment. Thus what the choir sings in lines 1513-1520 is basically not only a lament for their King's death, but also the realisation that means the prolongation of the ill-fated saga of the House. Therefore Agamemnon's cry (1343) is very significant as 'it is part of the house and his slaughter is the renewal of its troubles.'[224] Towards the end of this part, Xenakis indicates the movements of the chorus before it exits the orchestra and how it could interact with the audience. He writes on the score that during the pages 55 until 59 inclusive, the male choir goes into the auditorium and forms two semi-circles around the public, spreading fanwise towards the back. He also suggests that 200 small metal flags should be distributed to the audience, at the end of the work, uniting with the spirit of the choruses. Stage directions are also given at the beginning of the *Choephores*, where Xenakis suggests that the female chorus (with Electra) should enter slowly on stage and group itself in the usual way.[225]

b) <u>Choephores</u>

In *Choephores* the chorus significantly enhances its role, with prominent singing and interaction that causes tension and dramatic intensity. Xenakis initiates a rapid interchange, sometimes a contrapuntal correspondence, between the chorus members in bar 140, which does not conclude until bar 295 (Example 2.3). This lengthy passage is full of energy and impulse accomplished by the involvement of different types of singers that the composer indicates in the score.[226] The stanzas used in this part are various and many, starting with the one referring to the name of this part (Libation Bearers), ('I have been sent from the palace to convey libations', stanza 20) and finishing off with Aegisthus's cry (869), which like Agamemnon's scream is heard off stage. Both cries are indicated on the score by the composer, but are not heard. The dramatic sense we get from the intense interaction between the chorus members is also achieved by a kind of

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[224] Oliver Taplin, *Greek Tragedy in Action,* (Great Britain: Methuen and Co, 1978) 103.
[225] This is indicated as having effect from the first page on the score until page 65.
[226] Xenakis clarifies that O= 3 voix claires d'hommes E= 3 voix graves de femmes C= choeur de femmes and H= Choeur d'hommes (Voix sans modulations d'aucune sorte).

artificial *stichomythia* which Xenakis creates. He chooses individual lines from each stanza whose meanings correspond to produce a form of pseudo-dialogue. Thus in line 315 of Orestes's *strophe I* ('Father, who fathered us to woe') corresponds to Electra's *antistrophe I* ('Hear now, O father, in turn'), and also to the chorus's line 340 ('may us utter cries of more auspicious note'). In *antistrophe II* the chorus sings ('Dear to the dear ones who nobly fell at Troy') and this is linked to Electra's *antistrophe III* ('Not even beneath Troy's walls, father would I have had you perish'), in line 363. Orestes's calling to Zeus in line 382 ('Zeus Zeus you who send up from below late-avenging ruin') corresponds to Electra's line 395 ('Zeus lay his hand upon them'). Xenakis also repeats another choral refrain here from line 459 ('Come to the light, *and hear us*') as he did in *Agamemnon's*, bars 18-23 and 38-41 and again, he mixes verses up which do not necessary follow chronological order. This process is particularly emphasised from bar 256 to 286 where he simultaneously blends various lines (Example 2.4).

In bar 308, Xenakis returns to a syllabic and more straightforward presentation by the chorus which prays to Zeus. The selection of this particular stanza by the composer should not be seen as accidental. As Lloyd-Jones comments, this 'ode is the most difficult in all Greek tragedy'(783-789).

Chorus: Now, in answer to my prayers, I implore you, Zeus,
father of the Olympian gods, restore this house,
give it good fortune, so those who rightly love due order
may witness it right here.
In every word we cry, we plead for justice.
Oh Zeus, protect what's right.

Its text is extremely corrupt and in several places it cannot be restored with any real certainly'.[227] Xenakis chooses specifically to quote this stanza after line 505 and an instrumental interlude.

Chorus: Now, in answer to my prayers, I implore you, Zeus,

[227] Hugh Lloyd-Jones *The Libation Bearers* (Prentic Hall, 1970) 53.

father of the Olympian gods, restore this house,
give it good fortune, so those who rightly love due order
may witness it right here.
In every word we cry, we plead for justice.
Oh Zeus, protect what's right.

c) Eumenides

The last part of the trilogy, *Eumenides*, starts off with Pythias's lengthy prayer to other gods (1-63). As stated earlier, this part manifests a more positive dramaturgy, released from the extreme acts of violence in *Agamemnon* and *Choefores*. Although 'diminished in passion and suffering'[228], the tragic element is still eminently present, with the chorus being 'the protagonist of the play, prepared from the beginning for a definite confrontation.[229] Thus Xenakis chooses for his first quotation lines 140-149 (parodos), which are the chorus's first frustrated song as they see Orestes escaping to Delphi. ('Wake up and then wake your neighbour as I wake you!. . .'). Bars 71-95 are based on an entirely new idea of non-synchronous singing (Example 2.5). As the composer indicates on the score, the singing here should 'crient en mèlange de voix non synchrones.' All the chorus members sing the same lines (140-179) in a slightly different time, creating a verbal confusion, a total lack of understanding of what is said or sung; this aims at illustrating the chorus's psychological state as it determines to take revenge for Orestes's matricide. Hence, Xenakis here makes use of a different choral style, being compatible with the emotional weight of the text. In the actual drama the second stasimon (490-565) is a 'great central ode', which 'might well strike the hearer as so inconsistent with their dramatic personality, as to be credible only as a sort of Aeschylean parabasis.'[230] However, these lines are eliminated from Xenakis's *Oresteia* – although the reason is unknown – and the composer proceeds from line

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[228] Thomas G. Rosenmeyer, *The Art of Aeschylus* (Berkeley. University of California, 1982) 168.
[229] Collard, *Aeschylus: Oresteia*, liii.
[230] Ibid.,156. These lines have also been described as 'change-over ode' and the last ode is sung by the Furies. See Rosenmeyer, p176.

321 ('Mother who bore me') to 682, which until the line 708 is the second solo addition of *Le Déesse Athéna*. The lines 778-1020 are of particular dramatic importance as here the Erinyes are being transformed from blood-sucking underground powers to respected goddesses after Athena's protection and help. At this stage Xenakis wishes to make his own conversion and the 'new Erinyes' are now impersonated by children.[231] In bars 239-251, there is a children's choir which sing simultaneously with the rest whilst using metal *simantra*[232] (Example 2.6). Thus, for the last part of the trilogy, Xenakis demands a mixture of a new choral treatment – asynchronous delivery of the text – with children's chorus, and with treatments already applied in the first two parts, that is to say conventional choral odes coupled with rapid interactions in the fashion of a *stichomythia* (*Choefores*).

The table below summarises the stanzas used by Xenakis in the score of *Oresteia* with or without text.

Agamemnon (first part)

Bars	**Lines**
18-58	121, 160, 176 (with text)
59-98	218, 228, 237, 252
99-136	688, 681 (with text)
137-161	430
162-168	452 (with text)
169-178	456
179-186	462 (with text)
187-296	470, 781, 976, 1000, 1019, 1034

[231] This is what the composer indicates on page 122 of the score.
[232] As written in the *New Grove Online* the *semantron* is a 'sounding-board' or 'metal sounding plate', which served universally as a call of prayer. See Geoffrey Chew/Thomas J. Mathiesen 'semantron'. (Accessed 24 March, 2004). In the score Xenakis writes: 'Petits disques ou tiges suspendus portes par le choeur donnant un son argentin tres aigu lorsque choqués avec une tige métallique = Simantra métalliques. (Small discs or metal sticks held by the choir making a sharp sound when plucked with a metallic stick).

Kassandra

Independent Score	Lines 1035-1330 from *Agamemnon*

Agamemnon (second part)

Bars	Lines
297-316	1331, 1342
317-323	1343 (with text)
343-355	1448
356-399	1513 (with text)
400-461	1520, 1550

Choefores

Bars	Lines
1-70	20, 42
71-295	152 305,315, 332, 340, 345, 353, 363, 371, 382, 394, 400, 405,459,434,459,439, 456, 479, 463, 486, 489, 466, 490, 491, 492, 495, 496, 497, 471, 500, 476, 505. (with text)
306-363	
364-463	783, 789, 819 (with text) 825, 855, 869, 870, 946, 952, 1065, 1073

Eumenides (first part)

Bars	Lines
71-95	143, 149, 162,168, 173 (with text)
110-132	245, 255, 257 (with text)

136-161	306
162-196	321 (with text)

La Déesse Athéna

Independent Score	Lines 682-708 from *Eumenides*

Eumenides (part two)

Bars	Lines
206-305	894-903, 916, 984, 927, 938, 968, 996, 976, 999 (with text)
317-368	1033, 1044 (with text)

Reconstruction of the ancient sound?

The music of *Oresteia* challenges the contemporary ear. Although written almost half a century ago, Xenakis's work still offers us a modern music drama. As already stated, the actual ancient sound is uncertain, almost impossible to reconstruct with confidence and scientific accuracy. Thus for Xenakis, the natural melody of the original text was the only source of guidance and inspiration: 'The poetics of speech is the most important tradition we have inherited. None of the translations render or will ever render its strength. And how many people understand ancient Greek?'[233] The composer chooses to retain the musicality of the original language despite the fact that the contemporary philological theories are unsatisfactory and inadequate in their attempt to revive the ancient speech. Thus Xenakis's question concerning the comprehensibility of the Greek text could also be followed by another one: how many people are able to read and pronounce correctly the original text when it comes to singing?

[233] Xenakis, *Essays on Music and Architecture*, 108.

Indeed, Xenakis is not so interested in the meaning of the words or the logical narration of the text. The selection of various lines from Aeschylus's text follows a rather abstract continuity which breaks the natural narration of the drama. While the selection is not accidental, the plot of the story is not conveyed to the audience. Even if we could understand ancient Greek or get through Xenakis's verbal distortions, the text would still be scattered throughout the composition, engaging the listener not in the realisation of the drama, but in its own pure rhetoric. From this point of view, Stravinsky's *Oedipus* follows a similar path. As Walsh comments, Cocteau's account of the story is defective in many crucial aspects, giving no hints of important information and thus muddling things.[234] Despite the fact that Stravinsky involved the presence a speaker, who would communicate the necessary information to the audience, still this is not sufficient if one wishes to understand the plot of the play, following Cocteau's text. But does it really matter that Xenakis does not follow a chronological sequence for the lines he uses? Does this affect the narration? In *Agamemnon* for instance, he jumps from line 252 to 688, he continues with line 681 and from that he goes back to 430. However, the line 688 ('Helen? For in a matter fitting to her name') and 681 ('Who can have named her') could be used in either order and thus even if the listener is able to understand the text this will not perplex him or her. The line 430 which follows the 681 is used for an instrumental passage. Here Xenakis depicts the mourning mood which dominates at the Atreus's House and he selects the line in question which speaks directly about it. In *Choefores* this fusion of various lines which do not come in sequential order from Aeschylus's text is more common, but as in the previous part this does not affect the narration even if the text were comprehensible. The parallel singing between Orestes, Electra and the chorus encourages a seemingly random interplay between the protagonists although the use of scattered lines should be viewed as an echo of a dramatic game and not as narrative continuity. When they sing simultaneously the lines 489 ('Oh Earth, send up my father to survey the battle'), 486 ('Oh sorrow inbred in the race') and 490 ('Oh

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[234] Walsh, *Stravinsky: Oedipus Rex,* 12-13.

Persephasa, grant him beauteous victory!') Xenakis is more interested in the synchronous sound of 'Oh' as a common element rather the logical succession of the plot. In the same fashion, in *Eumenides* he mixes various lines up in a non-sequential order (984-927-938-968-996-976) when the children's choir is singing in parallel with the other choir. Again here, with the full independence of the choirs, Xenakis does not adapt Aeschylus's text as it comes but he selects specific lines.

Vocal versus instrumental music

As Robert Fajond comments, the originality of *Oresteia*'s music should be traced in three levels: prosodic, melodic, and rhythmic. Melodic and rhythmic peculiarities are in perfect accordance with the internal music of the recited text.[235] The dramatic discourse of the piece is mostly submerged in the different vocal styles throughout, while the orchestral interludes do not create strong oppositions. Matossian writes:

> The instrumental sections of *Oresteia* function as a temporal backcloth or moviescreen of sound which runs the background scenery while the dramatic events and sometimes the vocal action take place before it. This background tends to be continuous, sometimes homogeneous, avoiding dramatic curves, surprises or climaxes with the exemption of the percussion sections.[236]

Even though the instrumental parts in *Oresteia* do not inspire intense dramatic moments, it would be rather unfair to describe it as 'background scenery' and claim that it stands totally apart from the dramatic argument. The vocal action is emphatically foregrounded by the frequent changes in style throughout the piece. The choral passages have been used as an expressive outlet with varied manifestations and effects, which does not entail confrontation with the instrumental passages. Although the vocal parts are more ritualistic in character, more demonstrative in comparison with the instrumental parts, we should not overlook the fact that Xenakis uses specific lines and stanzas from the text, without using the actual words.

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[235] Fajond, 'Oresteia at Mycenae', 69.
[236] Matossian, *Xenakis,* 205.

Thus the dramatic action also takes place in the instrumental interludes, but in a different fashion. Whenever the composer uses the choir, the emotional thrust is more direct and dominant, while his instrumental parts keep their distance from the choir's pathos. By using instrumental material unrelated to the choral writing, such as glissandi, which is Xenakis's favourite sound, he lends a more straight-faced character, retaining though, the same ritualistic qualities as in the choral parts.

In the first part of *Agamemnon*, before the insertion of *Kassandra*, there is a balance between the instrumental and the vocal parts until bar 187. From this point and until Cassandra's monologue takes over, we get a lengthy instrumental passage split into two parts: bars 187-202 and 203-296. In the second part, Xenakis for the first time creates dramatic anticipation with purely instrumental means: first, with the uneven rhythm by the bongo; and second, with the appearance of the same motif (we could call it Agamemnon's motif) in bars 229, 241, 252, 263 and its more dense use in bars 270, 274, 277, 279 281, 282, 283 (Example 2.7). This passage reaches an anticlimactic ending in bars 284-6 and it finishes off with the same phrase it started with in bars 204-213. As stated, Xenakis in his essay on *Oresteia* refers to it as 'Agamemnon's fanfare' which he regards it as a symbolic event. Apart from this long instrumental passage that concludes the first part of *Agamemnon*, there is also another one, this time shorter, in bars 59-98, which leads to a short, self-contained melody repeated twice in bars 102-107 (Example 2.8, second system). Here the voices emerge from the instrumental interlude as the latter continues in parallel with the choral part, uninterrupted and unaffected by the vocal emphasis. It is a figure of austere moment with a descending tendency that reminds us of the claim that ancient Greek music had 'a general tendency to fall.'[237] On the whole, there is no choral exaggeration in this part which could openly suggest a dramatic evolution. Xenakis uses independent, choral localities, offering each time a different taste of dramatic action.

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[237] R.P.Winnington-Ingram *Mode in Ancient Greek Music* (Cambridge: Cambridge University Press, 1936), 5f. The author writes that is often quoted as evidence that Greek melody had a general tendency to fall. In the 'Aristotelian Problems' the question why a descending scale is more harmonious than an ascending one is asked. See also p4.

The voice of *coryphaeus* in bars 24-50 counterbalances the overwhelming singing by the choir in the immediately preceding bars 18-23. Here, the melody consists mainly of the same repeated pitch with minor changes when the melody of the text requires. For instance, in bars 24, 25, 28, 33 and 34, Xenakis follows the natural accent of the words, changing the value of the pitch in question. Thus for the stressed syllables προσε-νέ-πω, προσει-κά-σε, Δι-ό-ς, ά-χθος and ετη-τύ-μως, there is a rise in the melodic contour (Example 2.9, third system). Metrically speaking, there is a correspondence between the number of the syllables and Xenakis's stresses in bars 25-28 and the second part of bar 34, and also from bar 31 until the first part of bar 34. The same melodic and rhythmic consistency occurs again in bars 42-45 and 46-50. During the *stichomythic* action between the choir and the *coryfaeus* in bars 24-56, the music takes on a liturgic character when the name of Zeus is mentioned in strophe II, which is the choir's special appeal to the god. Thus Xenakis sought to treat the subject of worship and prayer through his music by using a plain, undecorated setting that resembles the spirit of faith and church.

Agamemnon's chord

In the second division, after Cassandra's solo part, the murder of the protagonist Agamemnon is the epicentre in both the play and the music. As stated, Xenakis mentions this event in his essay 'Antiquity and contemporary music' explaining that there is a 'sonant comment' on Agamemnon's death. He indicates twice the protagonist's screaming in bars 316 and 323, but while in the play Agamemnon's voice is heard, albeit off-stage – delivering the lines 1343 and 1345 – in the score Xenakis chooses the choir to sing the lines in question although it is written that they should be sung by the *coryfaeus*. Agamemnon's cry is indicated by the unnotated choral outburst. The vocal and instrumental passages in this part enjoy an independent action with the sole exception of bars 356-399, where the same melodic pulse is carried by both words and music. The latter follows the

native stress of the words and duplicates precisely the rhythm and the melody in the vocal line.

What is the most arresting feature here is the harmonic design throughout this part. It is striking that Xenakis models the majority of his music on an constant relationship between G and C and their possible microtonal alterations. This recurrence is initiated in bar 355 with a loud chord based mostly on these pitches (Example 2.10). The chord is played throughout the refrain sung by the chorus in *antistrophe II* and it accompanies the choir's lament until it ceases to sing.

The way Xenakis uses this chord, at the beginning of each line when the chorus does not sing the text, makes it more explicit in the articulation of the particular stanza. The indication of triple forte and also its unaltered version throughout this part help it to have a central, important role. From bar 400 until the end of the first part of the trilogy, there is a shift in musical style returning to a more 'Xenakian passage' with a glissando melody to carry out the dramatic symbolism of Agamemnon's end. As the composer indicates on the score, this passage refers to Clytemnestra's justification for killing her husband ('Neither, I think, was this man's death shameful'-1520). The singing has stopped, giving way to an abstract representation of Agamemnon's murder. Xenakis provides only a musical commentary for this moment selecting Clytemnestra's lines (1520 and 1550), which do not appear on the score. The passage in question is probably what the composers describes in his essay 'Antiquity and contemporary music' as 'noises pertaining to music' (i.e. Clytemnestra's music). The glissandi here delicately represent a moment of anxiety and distress not only for Clytemnestra, but also for the men of Argos, who obviously disavow their queen's conduct. The 'Agamemnon chord' eminently present in the preceding bars reappears in bars 448, 453, and 456 with the same authority and harmonic precision.

Towards universality: the perfect fourth interval

It would be not an exaggeration to claim that the instrumental part is subordinated to the monodic[238], linear chromaticism of the choral singing. Again here, is in the first part, the melodies have a descending sequence mainly in the arrangement of a falling fourth. Xenakis's obsession with the particular interval reminds us of his view regarding the universality of music, which was his major consideration.

> The perfect fourth has a universal currency – in India, Africa, Europe, China, Japan. Nobody knows why [...] In the *pelog* the two fourths are interlocked in such a way as to produce leading notes. For instance, you have G and C going up, and F sharp and B going up [...] I have linked the *pelog* to the ancient European tradition of the tetrachord – and indeed to Aristoxenus and Euclid who both regarded the fourth as the most important constituent of the scale.[239]

Aristoxenus is mostly famous for his music treatises, especially on rhythm, although he had a wide range of interests. His treatise *On Harmonics* is his most distinguished theoretical book which proposes the laws of harmonics. He was the first 'to formulate the concept of genus defined by the position of the two movable notes within a tetrachord (spanning the interval of a 4th),'[240] which was the basis for melodic construction in the ancient Greek system. In the second part of *Agamemnon,* as we shall see, Xenakis adopts obsessively the universality of the fourth interval, creating a context of a multitude of variants based on the G-C relation.

Xenakis modelled his music on the thought of ancient practice. He was certainly interested in incorporating non-Western ideas and translating them

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[238] Monody in ancient Greek music was, apart from solo singing, also a lament, a threnody. Solon Michaelides, *The Music of Ancient Greece: An Encyclopaedia* (London: Faber & Faber, 1978), 212. Xenakis here uses a monodic setting to the particular stanza, which is a lament for the murder of Agamemnon. The connection between laments and the use of tetrachords became clear in the Venetian operatic repertoire of the 1640s. Descending ostinato tetrachords were common in the Baroque period to express a mournful mood. Ellen Rosand 'Lament' *New Grove On Line* ed. L.Macy (Accessed 22 March, 2004) http://www.grovemusic.com.

[239] Varga, *Conversations*, 145. *Pelog* is one of the two major scales of Indonesian music, the other one is *Slendro.*

[240] See Annie Belis 'Aristoxenus' *Grove Music Online* ed. L.Macy (Accessed 15 November, 2005) http://www.grovemusic.com.

into his own musical language. The extensive use of micro-tonal interval, for instance, throughout Xenakis's oeuvre, is a genuine attempt to assimilate a music language common in ancient and non-Western cultures. In *Oresteia*, as in his other vocal works, microtonal singing forms typical Xenakian sonorities, which later proved to be central to the composer's musical tradition. Microtonal writing is a unique feature of the ancient music and later of medieval and folk Greek music. Byzantine music is profoundly linked with the melodic and harmonic language as handed down by the ancient Greeks. The enharmonic, modal system is also present in Greek folk music which was in turn inspired by the Byzantine chants. Xenakis was influenced by those sounds from his early years although Greek folk music never pervaded his music in the same way as Hungarian tunes in Bartók's works.[241]

> [Then] in Greece I heard Greek folk music, which is completely different, and Byzantine church music, as we had to go to church every Sunday. I didn't like any of these in particular, but they all had an influence on me. In fact, I wanted to get away from these influences – and so I tried to fight them.[242]

Singing

The singing in *Oresteia* adopts the microtonal effect of the ancient scales, the expression of Byzantine music, and the personal elements of Xenakis's aesthetics. He writes on the front page of the score that 'the words should be spoken, not declaimed, without any sentiment or expression whatsoever, in a 'recto tono' voice and without any modulation of pitch or volume.' The indication 'Partout absolument sans vibrato' at the beginning of the first and third part is indicative of the composer's persisting request for non-vibrato singing that helps singers (Xenakis claims) to avoid any expression of personal feelings. Singing *Oresteia* is not an easy task with regard to the

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[241] As Xenakis says, he was very much in love with Bártok's music. Varga, *Conversations*, 212.

[242] Ibid., 10. At the same interview Xenakis mentions that both the examples of Mussorgsky and Bártok helped him to understand and love Greek folk music, but he soon discovered that this was a provincial way of thinking. He needed it something more general. See also p.52.

style and the technical aspects of it. Performers are expected to render *Oresteia's* unrefined music and also to get to grips with the purely musical aspect of it, lending meticulous attention to Xenakis's preference for micro-intervals. It is not only the concern of the accurate pronunciation of the Greek text, but also the accurate performance of quarter tones for instance, which challenge the singer used to conventional Western harmonies.[243] The performance of *Oresteia* requires a different approach from Western tonal music. Prost comments that this type of musical writing could be a problem for Western musicians as the singing of quarter-tone music can be achieved only approximately, not naturally.[244] Fajond also acknowledges the similarities between Byzantine chanting and *Oresteia's* singing:

> Xenakis is linked to an old vocal tradition. For those who have heard, at least once, the Greek Orthodox hymns, the resemblance is too blatantly obvious to be ignored: the micro-intervals, different types of cadenzas, the breath, are clearly inspired from this tradition [...] Why should one deny these creative loans to Xenakis, which in another epoch and in another geographical area created Bartók's grandeur?[245]

In the second part, *Choefores*, the musical style can be broadly divided into three sections: a) bars 1-124, b) 125-305, and c) 306-463. In the first 124, Xenakis employs again a glissando passage similar to that in the last bars of *Agamemnon*. In this way he retains the musical style from the previous part by showing consistency with the glissando sound and also paraphrasing Agamemnon's chord in bars 81, 86, 100-103, 117 and 123 (Example 2.11). Here, the chord in question is used in the same context to introducing each line sung by the chorus and articulating a kind of musical motif, which passes from one part of the trilogy to the other. The second section

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[243] The term 'quarter-tone' was initially used by 17th and 18th theorists and it can be found in the context of medieval music. Julian Carrillo, Ivan Vishnegradsky, Valentino Bucchi, Charles Ives and Pierre Boulez are among the composers who wrote quarter-tone music.

[244] Christine Prost 'On Oresteia' in *A Homage to Iannis Xenakis* (Athens: Sinchroni Epochi) p.66. ('Για την Ορέστεια' in *Ιάννης Ξενάκης: Ένα Αφιέρωμα του Εθνικού Μετσόβιου Πολυτεχνείου*, Αθήνα: Σύγχρονη Εποχή).

[244] The difficulty of performing microtonal music was first mentioned by Aristides Quintilianus, a Greek theorist, who defined the enharmonic genus 'as more precise and difficult to be performed by many people'. See Michaelides, *The Music of Ancient Greece*, 100.

[245] Fajond 'Oresteia at Mycenae' 70. Prost notes exactly the same when she writes that 'One would dream of hearing *Oresteia* or *À Colone* from choirs educated in singing Byzantine polyphonies.' See also p.66.

intensifies *Oresteia's* vocal nature. This is achieved by the non-instrumental function of the music, the shift from the flow of the glissandi sounds to the excessive passion of un-pitched vocal rhythm. The intense interplay of the voices here points towards a different action and movement. Even though the choral singing seems to have the potential of being rather monotonous, without specific musical or rhythmical indications, Xenakis progressively creates a cloud of a vocal interaction, interchanging an ongoing succession of events and thoughts. The dynamic of this self-contained, central effect is lightly supported by the rhythmic pulse of various percussive elements which accompany the playful spirit of the voices until its end. From bar 306 onwards, Xenakis returns to a more conventional unsophisticated singing, based on a chromatic and mostly strictly syllabic treatment of the text, which lends an anticlimactic character to music. In contrast to the difficulty of the particular stanza (783) as stated earlier, the composer ensures the positive spirit that the listeners receives from the lines in question ('Now in answer to my prayer Zeus. . .grant fortune to the house's rules'). It is a low-pitched passage, opposed to the high, albeit not so assertive sounds of the piccolo and the general overwhelming soundscape in the preceding bars. In the coda bars 445-463, the orchestra is confined to the performance of a single pitch, which although seemingly invariable in terms of written rhythm, with different stress on certain pitches creates a strong rhythmic contour (Example 2.12). The sound of eighteen simantras in relation to the rhythmic play on e̲ could loosely be connected with the 'semantron sound' played in the Orthodox monasteries, especially of that in Mount Athos, a sound which Xenakis must have been aware of.

With the first sounds of *Eumenides*, we become instantly acclimatised to the new setting: the famous Oracle at Delphi. The regally articulated percussion beats enrich the dramatic aspect of the composition which, in this last part, seeks a new identity following the development in Aeschylus's play. The metamorphosis of 'Erinyes' into Eumenides and the resolution of the bloody saga in Atreus's House lead the music to the direction of grandiosity. It is a 'free fluid movement' as Matossian describes it, where 'speech is accompanied by instruments, bars are entirely eliminated to avoid strong

downbeats and to preserve the inner buoyancy of the self-generated spoken rhythm.'[246] The asynchronous singing of the choir in bar 71 together with the parallel, but substantially different singing of the two choirs in bar 246, are the new and perhaps the two most important features in this part. After the pompous, slow introductory section, the music bursts into a chaotic, densely vocal interaction offering a very different sound to the listener. This is the moment commented on by Xenakis in his essay on *Oresteia* as 'support of the orchestra' from stanza 140 onwards. The voices take over and dominate the scene with their noisy and rushing attack of imperceptible verbalisms. The sound of rapidly non-synchronous words has an unexpected explosive effect faithful to the unfolding of the text. ('Do you sleep? Up, cast away sleep, and let us see if in this prelude there is any fault'). It is Clytemnestra's ghost who invites the Erynies to get up and take action. In the Greek text, this moment is illustrated by the dochmian meter, which usually denotes violence and distress. Musically this is accomplished by the musical contrast with the preceding bars where the intensity of the vocal fusion creates an almost instrumental timbre (Example 2.13).

The transformation of Erynies into *Eumenides* is represented for the first time by a boys' choir in bar 246. The message is positive and optimistic in stanza 984: ('But may each give joy to each, in a spirit of love toward the common weal and may they hate with one accord for many are the sorrows among the mortals that this can cure'). Xenakis prepares the entrance of the children's choir from bar 224, writing on the score that 'at this point the children's choir enters slowly and until measure 244 groups itself in the middle of the stage, in front of everybody' (Example 2.14).

The transformation of Erynies into kind, benign creatures, is of course the central theme in this part, but the music sung by the children is more a background singing. The calm, almost immobile voices of the boys create an eerie, distancing effect in sharp contrast with the independent, assertive sounds heard by the second chorus, which utters various lines even from

[246] Matossian, *Xenakis*, 205.

preceding stanzas. Musically speaking the children's singing is confined to a *cantus firmus* melody opposed to the rough voices of the other choir and the relative instrumental inertia.

From bar 317 till the end, Xenakis uses most of the lines from the final stanza (1033-1047) of the play. It is the first time that each of the voices from the main choir (the children's choir has already ceased to sing) take up a different melody sung simultaneously until bar 330. It is also the first time that we get a conventional chord written for the choir in bar 317 and again in bars 335-342, where it sings a non-microintervallic melody (Example 2.15). The notation on bars 317-330 seems more an unpromising static harmony resting on vertical micro-chromatic intervals. However, the musical result is rather contrapuntal in character, with the four voices delivering each syllable of the stanza at different moments. Here Xenakis plays with the vocal effect *per se* based on the natural accents of the words and the alternation of dynamics. With the rapid and extreme modulation of dynamics he creates a kind of pseudo-glissando. With the asynchronous performance of the stressed syllables there is an interesting displacement of spoken emphasis each time. The accented vowels are heard as echo succeeding from one voice to the other and carrying over their resonant effect. 'Raise a glad cry, echoing our song' utters the choir twice in the final stanza and Xenakis reflects with musical means the spirit of the text. In bars 339, 346, and 349 he produces very brief, massive cries from all parts of the choir, before reaching the final bars 357-368, where the music sets the actual phrase (final bars 356-368). The composer uses twice a short polyrhythmic passage to conclude *Oresteia*, employing rapid alternating measures (5/8, 9/8, 12/8, 8/8) in the final bars and lending a Dionysiac spirit as the composition reaches its end and the drama its resolution. The polyrhythmic interaction between the choral and percussion sections remains unaltered the second time while, at the same time, the strings and winds develop ascending micro-glissandi which helps the music to reach its apogee (Example 2.16). The public is also instructed to take actively part in this musical climax shouting with joy and waving metallic flags, while the musicians and the choir play all the percussion they have whilst abandoning

the scene. In these final, climactic bars the plot leads inexorably to the moment of celebration and collective joy.

Instrumentation

Instrumentation is not heavy, placing emphasis on winds and various percussive instruments.[247] The cello is the only string instrument used here, rather unusual for the Xenakian instrumentation, which favours strings. In bar 342 of *Choephores* he uses a plectrum, lending a weak timbre resembling the sound of *aulos* and *kithara*.[248] But despite the seemingly 'thin' instrumental presentation Xenakis's instrumentation is also based on the instruments carried by the singers and the metallic flags waved by the audience. The performers are expected to play wooden and metal simantra, whips, sirens, maracas, drums and small bongos, thus enriching the mobility of sound and lending a special timbre. As written on the score 'some special effects could be provided by means of echo-chambers and loud speakers.'[249] But at the end, does Xenakis compose what he envisioned? Could this be the appropriate music for the ancient Greek theatre?

> To what extent is this a music of restoration? Undoubtedly certain precepts from ancient Greek music have been observed, both the choice of instruments and their proportion to the number of voices, avoiding the suggestion of an orchestra or large ensemble, while much of the instrumental writing is based on freely ranging modality, tetrachords and microtones [...] [But] Xenakis tells us more about our time and the way we see the past by the particular elements he singled out and the way he incorporated them into a style and sequence of a modern composition.[250]

We shall never know how close is Xenakis's music to the ancient Greek model. But we are certain, as the composer himself writes, that this can be an 'experimental interpretation that embraces both the past and the future.'[251]

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[247] The exact instrumentation is: Flute (doubling Piccolo), Oboe, Clarinet Piccolo in Eb, Contrabass Bassoon, Horn in F, Trumpet in C (doubling Piccolo Trumpet in Bb) Tenor Trompone, Tuba, a great selection of Percussions for three players and a Violoncello.
[248] Matossian, *Xenakis*, 203. Aulos and kithara were the two most common instruments in ancient Greece.
[249] It is mentioned that these special effects could be at the insert of *Kassandra* p35, at the death cries of Agamemnon and Aegisthus pp38&91, at the insert of goddess Athena p118, and at the ending of pandemonium.
[250] Matossian, *Xenakis*, 205.
[251] Xenakis 'Antiquity and Contemporary', 111.

Chapter three: Political drama and the metaphor of science: phonemic works

Politics and music

If Xenakis's *Oresteia* is a personal demonstration of the ancient Greek spirit, then the music of *Nuits* (1967) and *Cendrées* (1973) brings to the fore a different kind of dramatic momentum: the cruelty and suffering of a totalitarian regime. As stated in the introduction to this thesis, most of Xenakis's music, whether instrumental or vocal, is closely geared to his personal world of suffering and survival. We may think that, up to a point, this is a natural consequence of post-war life. Many modernist composers experienced the trauma of the Second World War, but surely not all of them were keen to write music based on their personal, shocking experience from that period. Ligeti wished to distance himself from his wartime experience although it was equally traumatic as Xenakis's. In one his conversations Ligeti said that 'anyone who has been through horrifying experiences is not likely to create terrifying works of art in all seriousness. He is more likely to alienate.'[252] For Xenakis wartime memory was not only a mere musical corollary, but also another path to stochastic music.[253] *Nuits* was the composer's first phonemic work, and it was followed by *Cendrées* and *N'shima* (1975). Together, the three of them are perhaps Xenakis's most significant phonemic compositions. *Nuits* and *Cendrées* share the same emotional rhetoric based on the topic of domestic dictatorship in Greece and Portugal respectively. *Nuits* in particular is Xenakis's first political work. *Cendrées* was written six years later when both Greece and Portugal were under domestic dictatorship, but as Matossian comments for *Cendrées*: 'it states an inflammatory moral and political protest unambiguous in its

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[252] See Arnold Whittall, *Musical Composition in the Twentieth Century* (Oxford: Oxford University Press) 295.

[253] See his essay 'Elements of probabilistic (stochastic) methods of musical composition (1962), in Iannis Xenakis *Essays in Music and Architecture*, (Athens, Psichoyios) 73. ('Στοιχεία Πιθανοτήτων (Στοχαστικών) Μεθόδων Μουσικής Σύνθεσης' (1962) in Ιάννης Ξενάκης, *Κείμενα Περί Αρχιτεκτονικής και Μουσικής*, Αθήνα: Ψυχογιός).

intent.'[254] In both *Cendrées* and *N'shima* the concept of Brownian motion serves as the common ground for the compositional process. As we shall see, Xenakis's phonemic compositions correspond more to his instrumental works in terms of musical thinking (scientific application) and style (glissando technique) than to his theatrical pieces. Thus while some of his vocal works revolve round the idea of the classical heritage as the primary prototype for their conception and his instrumental works emanate mostly from mathematical calculations, the phonemic compositions stand somewhere in between. They retain a dramatic force together with a scientific logic which is not hidden. *Nuits* and *Cendrées* also convey Xenakis's political reflections as the music is closely related to a socio-political plot whose influence assigns to it an almost representational purpose. In this chapter I shall discuss in particular a) Xenakis's relationship with politics and how socio-political factors affected his vocal works *Nuits* and *Cendrées*, b) the use of text as dramatic context, c) in what way his phonemic works resemble his instrumental works (with a detailed discussion of *Nuits*), d) the Brownian motion and its application to *N'shima* and *Cendrées*, and finally, e) Xenakis's 'theatre of cruelty'.

First-hand experience during the Second World War had a heavy impact on Xenakis. Even after many years and after becoming a celebrated composer, he was still sensitive to socio-political issues which affected Greece and other countries. Xenakis was a left-wing artist. Although he never declared a committed passion for political affairs or expressed extensively political messages through his compositions like Luigi Nono,[255] for instance, Xenakis's life and music prove to be rooted in a certain ideological context derived from his early years as a young protester in occupied Athens. From his contradictory statements regarding politics, it seems that Xenakis was not at ease with such issues.

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[254] Nouritza Matossian, *Xenakis* (London: Kahn and Averill, 1986), 236.

[255] Nono like Xenakis was an active communist. In the 1950s, he was using poems for his vocal works from figures such as Lorca and Neruda. ('Tre epitaffi per Federico Garcia Lorca', 'La victoire de Guernica', 'La terra e la compagna and Cori di Didone'). *New Grove Online* (Accessed 19 May, 2004). Nono's piece 'Il canto sospeso' (1955-6) is based on texts by prisoners of the European resistance.

> My occupation is obviously that of music and all the related fields, that is philosophy, mathematics, and science. I can follow social problems from a distance because it is a matter of place, time, and specialisation too.[256]

However, in his article 'Des univers du son' (1977), Xenakis talks about the 'social and political universe'. He expresses the view that 'nobody is beyond his time, the society, the social class[...]On the contrary, music and art act [also] on a socio-political level [but] in a very indirect and mysterious way.'[257] Likewise, when Xenakis delivered a speech in the Greek National Opera in 1975, he emphatically said that he is not a 'committed artist but free!'.[258] Almost twenty years later (1991) in another interview, Xenakis declares clearly his political views: 'Of course I am sympathetic to the left-wing ideology, but sometimes I try to suppress and erase this feeling because I'm tired of it...'[259]

When Xenakis composed *Nuits*, it was a period of a universal political turmoil with rebellious youth at the forefront of the international political scene.[260] The piece was commissioned by the Calouste Gulbenkian Foundation for the French contemporary music festival at Royan in 1968, a significant year for France marked by the historical events of May '68.[261] The year 1968 was extremely important from a political point of view world-wide. Two major student-initiated rebellious movements took place, one in France and one in Mexico, at the same rise as the rise of the military junta in Peru and the beginning of the end of the War in Vietnam. In most European countries the demonstrations were student-led. In Italy and Germany extreme left-minded groups caused a series of problems by protesting against the policy of their government. In France, the events of

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[256] Xenakis *Essays in Music and Architecture*, 148-9.
[257] Ibid., 166 and 168.
[258] Ibid.,148.
[259] Christos Tsanakas *Xenakis: The Music of Stars* (Futura, Athens, 2001) 59. (Χρήστος Τσανάκας, *Ξενάκης: Η Μουσική των Άστρων*, Futura, Αθήνα 2001).
[260] For more details see J.Robert Wegs, *Europe since 1945: A Concise History* (New York: St. Martins Press, 1984), especially the chapter '1968: Year of Crisis'. For a detailed account of the global history in the sixties, see Arthur Marwick, *The Sixties: Cultural Revolution in Britain, France Italy and the United States c.1958-c.1974* (Oxford: Oxford University Press, 1998).
[261] Albert Castanet '1968 A Cultural and Social Survey of its Influences on French Music' *Contemporary Music Review* 8, no.2-3 (1993): 25.

May '68, initially a student-led movement, marked a new chapter in the history of Europe. At that time, many well-established composers felt it necessary to respond to the unstable socio-political situation by writing music that would be reflective of the current political scene. Luciano Berio wrote 'Sinfonia' in 1968 and the second movement was a homage to Martin Luther King while the third movement contains slogans of May 1968.[262] Luigi Nono's 'Non consumiamo Marx' (1968-9) is based on Parisian graffiti of May 1968, and also the 'Contrappunto dialettic alla mente' (1968) is dedicated to the army of liberation of Venezuela. Henry Pousseur wrote the 'Couleurs croisées' (1968) inspired by the famous speech of Martin Luther King 'I have a dream'.[263] In Greece the political condition was also negative in that period, marked by a seven years' military dictatorship and the abolition of the monarchy. The Greek royal family had a strong political role before the official government was overthrown by a group of colonels that restricted its power. In the course of the military junta (1967-1974), people with left-wing views were prosecuted and jailed while civil servants and teachers were dismissed. The colonels believed that their task was to protect Greek society and values from Western and secular influences. The restoration of democracy took place under the Prime Minister Constantine Karamanlis in July 1974.[264]

Nuits is one of those pieces from the sixties inspired by the political events of that time, dedicated to all prisoners around the world who opposed and fought against such regimes.

> It is worth remembering that as Xenakis was working on *Nuits* (and *Medea*) in 1967, his country, Greece, was plunged into the darkness by a military junta. He, too, had been a political prisoner as a student in occupied Greece and, still under the death sentence by military tribunal, was living in exile [...] Xenakis is able to produce interference beats and purely 'orchestral' timbres with voices. He seems determined to strip them of linguistic connotation, just as the

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[262] Pierre Albert Castanet '1968 A Cultural and Social Survey of its Influences on French Music' *Contemporary Music Review* 8, no.2-3 (1993): 25

[263] Ibid.,19-43.

[264] See more in Richard Clogg, *A Short History of Modern Greece* (London: Cambridge University Press, 1986), especially the chapter 'Uncertain democracy and military dictatorship 1949-1974'.

> prisoners to whom he has dedicated the work had been deprived of free speech, their words stripped of meaning and reference.[265]

Likewise Xenakis's *Cendrées* is linked thematically to *Nuits*; the subject of oppression and cruelty is also acknowledged here. In one of his speeches in Athens Xenakis said:

> I wrote [it] when there was still a dictatorship here. And because it was intended for Portugal, where they also had dictatorship I called it Cendrées (Ashes) [...] I worked a lot on it [...] it was not easy, it took me several months to finish it; it was a slow procedure.[266]

Xenakis did not offer a theoretical explanation of the piece, nor did he respond to what the music intended to express. Xenakis avoided answering those questions directly, saying that whatever he does in any field has the same objective.[267] But what is certain is that both *Nuits* and *Cendrées* are related, whether explicitly or implicitly, to a particular political context, that of despotism, using the universal language of abstract syllables. The treatment of the phonemic text and the music itself, whether strictly vocal or not, is the backbone of the dramatic argument.

Nuits: Sumerian and Persian phonemes

Apart from being a vehicle for a political commentary, *Nuits* was soon regarded as the most important vocal composition of Xenakis. It was the first time a phonemic text was used by the composer, following settings of classical texts such as *Polla ta Dhina* (Sophocles,1962) and *Oresteia* (Aeschylus, 1965). The music is strictly defined in relation to the timbre as it is organised around the twelve voices in different contexts. Xenakis here experimented with Sumerian and old Persian phonemes as his phonemic matrix for *Nuits*.[268] Because of its syllabic character, Tim Souster suggests that we could occasionally parallel it with Messiaen's *Cinq Rechants,* also

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[265] Nouritza Matossian, sleeves notes from the CD *Choral Works* (Hyperion - 66980), 1998.
[266] Xenakis, *Essays on Music and Architecture*, 141. Portugal was under dictatorship for almost fifty years (1910-1974), the longest dictatorship in the history of Western Europe. Democracy was established one year after *Cendrées* was premiered in 1973.
[267] See Xenakis, *Essays on Music and Architecture* pp. 141 and 149.
[268] Bálint András Varga, *Conversations with Iannis Xenakis* (London: Faber & Faber, 1996) 105.

scored for 12 mixed voices, three for each part.[269] But such a parallel would be very unsatisfactory given that the two pieces are conceived on diametrically opposed principles: *Nuits* greets the notion of collectiveness as a mass-sound phenomenon, while in Messiaen's piece the voices enjoy self-expression through individuality. The text used in *Cinq Rechants* is an amalgam of conventional text with sounds of Quechua (old Peruvian language) and Sanskrit. In *Nuits* the piece is based exclusively on non-meaningful phonemes. Perhaps the only similarity would be the common concern of the composers to construct timbral qualities using phonemic material. But the result is fundamentally different. Putting aside any ideological considerations that Xenakis may have had for texted vocal pieces, it seems sensible that he used vowel material alone for a glissando-based composition.

In *Nuits* words are viewed as musical matrix. The composer himself admitted that the usage of these phonemes was nothing but incidental, meaning that they had a subordinate role.[270] In his later vocal compositions, when words again needed to serve as something other than storytelling models, Xenakis applied his own phonemes for most of them. Vocal works based on phonemic texts include *Akanthos* (1977); *Anemoessa* (1979); *Nekuïa* (1981) *Pour la Paix* (1981); *Pour Maurice* (1982); *Knephas* (1990). He also borrowed extensively from the ancient world for which the composer had expressed many times his fondness. These works are: *Polla ta Dhina* (1962) Sophocles; *Oresteia* (1965-6) Aeschylus; *Medea* Seneca; *À Hélène* (1977) Euripides; *À Colone* (1977) Sophocles; *Aïs* (1979) Homer and Sappho; Serment (1981) Hippocrates; *Idmen* (1985) Hesiod; *Kassandra* (1987) Aeschylus; *La Déesse Athéna* (1992) Aeschylus; *The Bacchae* (1993) Euripides. Also *Chant des Soleils* (1983) Xenakis after Peletier de Mans (16th century) and *Sea Nymphs* (1994) from Shakespeare's *The Tempest*. In *Nuits* the use of abstract phonemes may express the necessity of a universal communication through the sounds themselves. With an almost

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[269] Tim Souster , 'Xenakis' Nuits', *Tempo*, no.85 (1968): 5-18.
[270] Varga, *Conversations*, 105.

disturbing vocal sound, the music comes closer to the subject Xenakis wishes to address, if not conditioned by it.

Cendrées: abstract syllables

Similarly, *Cendrées's* text derives its impulse not from a concrete story, but from abstract syllables whose sounds have been precisely indicated by the composer. The piece was, like *Nuits*, commissioned by the Calouste Gulbenkian Foundation, and is dedicated to Monsieur and Madame Jose de Azeredo Perdigao. The music bears two typical Xenakian features: as far as the orchestra is concerned, it is based on a solid body of complex glissandi which intermingle meaningfully in the course of the composition. The effect of this context is a dynamic form – as expressive gesture – that becomes the main idea of a self-contained musical discourse. The vocal part, on the other hand, shares the technique of a 'nuage' (cloud) sonority, which Xenakis mentions frequently on the score. Matossian rightly observes that in *Cendrées*, as in Berio's *Visage*, 'the phrases are built up by the gestural content of the voice. [271] The 'nuage' sound has already appeared both in *Nuits* and *Oresteia* where the composer adopts the same vocal density, but this time, with the support of the orchestra, the effect of chaos dominates throughout the piece. When the voices are not lost in the large-scale orchestral complexity and take up a more independent role, Xenakis uses the 'attack' technique where the singers produce a sound from the back of the throat that he uses again later in *N'shima.*

What *Nuits* and *Cendrées* share is a sense of excess. The loudness of the music could be perceived as tension and distress. Metaphorically, we encounter a violent singing, as desperate in its nature as the political prisoners to whom Xenakis dedicated his music. In both compositions there are linear-driven passages, occasionally paralysed by strong rhythmic moments and profound vocal confusion. This sonic chaos is not confined to

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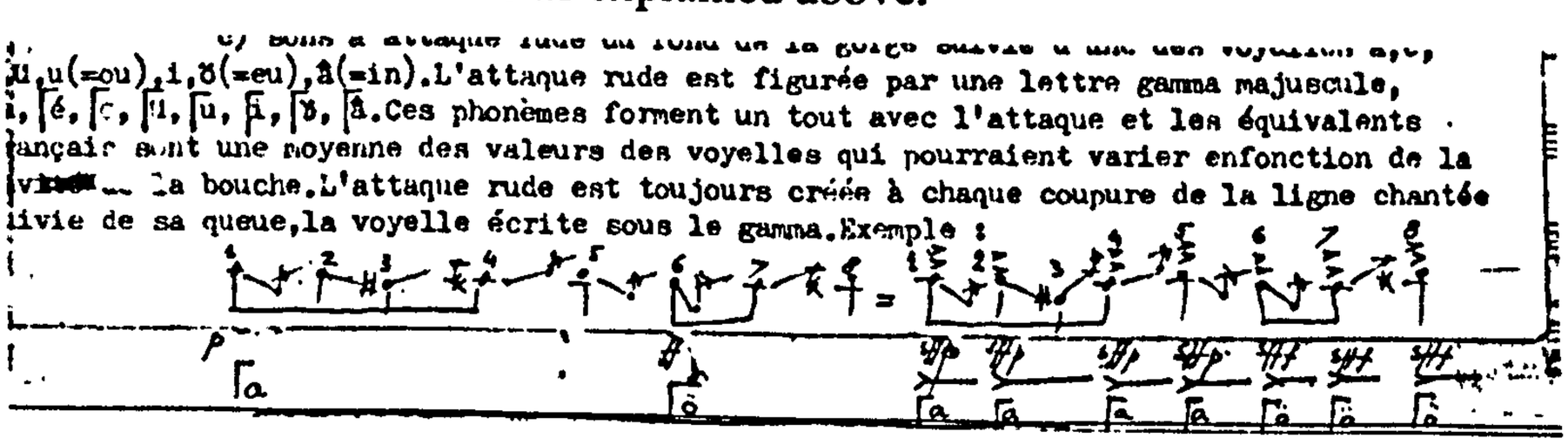
[271] See Matossian, *Xenakis*, 207.

voices, but affects the orchestral sound as well, precisely prescribed on the score by the composer:

> a) 'Breaths' are produced by blowing air through the instruments without creating any pitches, even though the fingers are forming different notes, b) Dry chords (or clusters) in the strings are produced by rubbing the bow-hair on the bridge in such a way so as to obtain an un-pitched 'shh' sound. The (intended) 'shhh' sound of the chords marked 'bridge' is an irregular grinding of the conventional bow on the lower register of the strings (on the bridge), which does not produce a note. This sound is not the same as what we call 'sul ponticello'.

The text is of particular interest in all three works. For *Nuits* Xenakis used Middle-Eastern phonemes and for *N'shima* Hebrew syllables. In *Cendrées* abstract phonemes, selected by the composer, are sung. On the front page of the score Xenakis makes the same comments concerning the singing of the vowels as he does on *N'shima's* front page: abrupt attack from the back of the throat which is followed by the vowels a e o u i o and a. The attack is written with the letter gamma (= Γ). The phonemes are simultaneous with the attack and the French vowels are an approximate indication depending on the mouth cavity. Each vowel corresponds to a specific sound. The phoneme Γa, for instance, is written for sounds 1, 2, 3, 4 and 5. Likewise the phoneme Γö occurs in the sounds 6, 7 and 8. The breath note makes a clear sound at its top. The choir sings vowels in French, for instance a, é, ü, o, u, (=ou), i, ö (=eu), â (=in). The composer indicates a) that these sounds can vary around the original French sounds, b) that they are notated at the beginning of a sequence, but they are repeated to every discontinuity of the sung line. The figure below (Figure 1) – written in the foreword to the score by Xenakis – shows the correspondence between the phonemes (Γa and Γö) and the numbered sounds as explained above.



N'shima: Hebrew text

N'shima was another commission, this time by the Testimonium Festival of Jerusalem where it was premiered in February 1976 under the direction of Juan-Pablo Izquierdo. It is dedicated to Rechna Freier and it is one of the few works of Xenakis with a non-Greek name, since here the composer chooses a Hebrew title to denote the character of his piece. In 1983 Xenakis composed *Shaar* (doorway in Hebrew) for large string orchestra, which was another commission by the Testimonium Festival. As written in the preface of *N'shima* by Dominic Gill:

> The Hebrew title means 'souffle' (nearly but not quite 'breath' or 'exhalation'). The text from which the music springs, but which it does not explicitly set, is a parable by Rabbi NACHMAN of Bratzlaw called 'Emperor's Daugher and King's Son'. Syllables only of the Hebrew words are used as purely musical material, absorbed entirely into an abstract texture, at no point directly narrative or programmatic. More precise meanings are left for the listener to decide: Rabbi NACHMAN's story tells of the children of two families, destined by history to be united but divided by the cruelty and meanness of the world.

Even though *N'shima* was a commission with certain specifications, Xenakis decides, as he does with any of his other vocal compositions, to invite the listener again to a stimulation of abstract syllables as sound *per se* rather than to the narration of a story. When it comes to vocal music the sound of words, whether ancient Greek or abstract phonemes, completes the realisation of the drama.

According to the preface of *N'shima* the Hebrew words which have been used and carry a specific meaning are: HA-YO (to be), HA-YA (was), GAM (also), SHA-CHACH (forgot), ISH (man) AV-DA (was lost), V'TA'-A (and went astray), A-RETS (country), TO-SHAV-ZAR (stranger), VHI-NE (behold), I-HUD (unification), OLAM (world).[272] Beatrix Raanan suggests that the initial selection of the words in the first bars of the piece (HA-YO, HA-YA, GAM, and V'TA'-A), independently from the individual phonemes, could form the beginning of a story if we translate them very

[272] Preface of *N'shima's* score.

freely (Once upon a time there was [someone] leaving).[273] However, the author is rather too keen to ascribe a narrative sequence to the piece as apart from this sentence in question, which is anyway too freely interpreted, there are no other similar examples. The use of the Hebrew words is scattered throughout the piece with the words I-HUD, HA-YO and HA-YA the most frequently employed. As in the case of *Nuits*, Xenakis is also interested in the combinations of consonants with their own distinctive sound, indicating that in *N'shima* he wanted guttural sounds which do not occur in any language. Apart from the Hebrew words that Xenakis used on and off, he used mostly phonemes and special guttural sounds.[274] No matter whether Xenakis deals with instrumental or vocal music the exploration of sound *per se* is a serious consideration. We get the impression that in any of his major vocal works it is the sound which builds the text, not *vice versa*.

Xenakis's phonemic works seem to approach closely his instrumental compositions. It is not only that the voices are used as an instrument in the fashion of other vocal compositions of that time, but the terminology applied such as *pizzicato* and *glissando* constitute a good example of the earnest instrumental character of particularly *Cendrées* and *Nuits* and the musical effect the composer wishes to achieve. In *Nuits* the structural segmentation of the piece is based on its timbre. Timbral oppositions (block structures) allow us to experience the vocal gestures that define the structure of the composition and the overall continuity. With this piece Xenakis composed his vocal equivalent of *Metastasis*. He pursued the same idea of musical continuity keeping the glissando technique again strictly to a very personal level of musical style.

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[273] Beatrix Raanan, 'Le souffle et le texte: Deux Approaches Formelles Convergentes Dans *N'Shima* De Iannis Xenakis' in *Présences de Iannis Xenakis*, ed. Makis Solomos (Paris: Centre de documentation de la musique contemporaine, 2001), 176-177.
[274] Varga, *Conversations*, 105.

Musical structure in *Nuits*

Let us now examine how the block, timbral structure works in *Nuits*. In the first sixty-nine bars there is a strong sense of glissando continuity by the voices, which determines the ethos of the piece (Example 3.1). Xenakis firstly introduces the two voices, sopranos and basses, while the middle ones, altos and tenors, are used initially as an antithesis to the purity of the glissando sound, which dominates in the initial bar. When the altos make their entry, the composer cleverly creates a sonoric duality between the two female parts, which is not contrasting like the one between sopranos and basses at the beginning of the piece. On the contrary, the soprano part, which used to be in the foreground until the thirteenth bar, is taken over by the altos for nearly two bars. This is achieved with the control of dynamics for both voices; *fff* for the altos and crescendo for sopranos, which leads also to a *fff* when the altos cease singing. The triple forte indication also supports the intended harsh sound of the *Hsu* phoneme at the beginning of the alto phrase (Example 3.2). The melodic contour of this points has an upward direction which links the short alto phrase to the sopranos' passage. Thus the sonorous continuity is not affected. The same model is used for the tenors' entry as opposed to the basses' part, but linked again to the dynamic indications of the sopranos' section. Although in both cases the extreme voices have a more background role, their progressive expansion is not interrupted. Prost writes that the middle voices do not give any kind of relief to the extreme parts but it sounds as if they emerged from them.[275] This relation although not always straightforward is converted towards the end (bars 65-69) to an interlocking of simultaneously constructed voices. It is the first time – albeit briefly – that the composer lets all the four parts float freely at once. A similar context is noticed in bar 38, but with the tenors to serve as a *cantus firmus* in contrast to the active singing from the other parts. In the last bars of this section this gestural, vocal fusion suggests a

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[275] Christine Prost proposes this in 'Nuits, première transposition de la démarche de Iannis Xenakis du domaine instrumental au domaine vocal' *Analyse musicale*, no.15 (1989): 64-71.

conclusive direction towards a timbral transformation. Here, Xenakis shifts from the glissando sound to the pizzicato one and all voices concurrently are aligned with a lightness of utterance. The musical expression is shifting smoothly from the heterophonically inarticulate glissando texture, to the homophonic concern of a single D, sung by all voices (Example 3.3).

In the second section, bars 70-127, the listener is confronted with individual moments of a distinctively fragmentary character. From the glissando insistence we are transformed into quick, intersecting timbral snapshots suggesting more a rhythmical activity than a melodic character. The passing to the third section is similar to the previous one, between sections one and two. As happened in bars 67-70, the transition between bars 125-128 follows the same dynamic pattern. The last bars from the one section insist on the cruelty of a *fff* which is repeated in the introductory bars of the next section. Thus, the two sections are connected with the same dynamic intensity that makes the timbral contrast even more straightforward. As happens in all sections all voices here are treated equally, the basses' part introducing each time a new rhythmic pattern. The fact that there is no preference for a particular vocal line confirms the massive-sound idea that the composer aims at. In bar 89, the altos serve as a point of departure for a new musical idea, followed immediately by the other parts, which reproduce faithfully an unmelodious singing (Example 3.4). Xenakis here is concerned with the production of vocal sounds based exclusively on vowels. As he clearly indicates on the score 'the passage from one vowel to the next is in a continuous way produced by the modification of the mouth cavity'. What is characteristic in this section, almost until the end of it (bar 119), is the conscious utilisation of the voice in its absolute purity. Firstly, with the emission of a strong rhythmic impulse and secondly, with the exclusive vowel utterance as melodic continuity. In both cases, where rhythm and different timbre are employed as means of sonic contradiction, all the voices are deprived of the expressive significance of pitch diversity. Each voice sings only one pitch until bar 119. From this point and only for four bars, the composer returns to an invariant rhythmical figure until the end of the section with the last three bars 123-125, recalling short glissando resonances

achieved by the use of dynamics almost forgotten in this section. On the whole, in these bars Xenakis opts for a more rich sound, alternating between the rhythmical human utterances and the flowing melodic extensions.

The third section, bars 128-169, is introduced by sustained sounds imitating the glissando practice. Despite the two silent bars and the deliberate disconnection between the two sections, Xenakis scores for a pitch identity in the lower parts at the beginning of the third section, which is related to the last pitch of the previous section. Although treated differently, the arrangement remains almost the same. The vocal treatment is what gives again a new perspective, with the pitch process playing a subsidiary role. The distinctive profile in this section is the transformation to a normal or normative utilisation of the voice, which for the longer part of the section utters human sounds, such as whistling or produces nasal ones. From bars 159 to 165, almost at the heart of the piece, the composer for the first time – and in contradistinction with the preceding moments – aims at a remarkably condensed texture (Example 3.5). As the music progresses, the listener gets the impression that the sound is moving into a tight yet rapidly mobile context. Prost describes what is happening here as 'deliberate anarchy achieved through a disorganised polyrythmic.'[276] It seems that it is more the pluralism of the rhythmical figures used here that gives this sense of energetic mobility than the sense of a disorder. All the three voices of the four main categories sing the same rhythmic pattern, but since they are three different for each of them, the aural result cannot be a definite one. With the help of dynamics the density creates intensity, but this is released instantly in bar 166 (Example 3.6). The last two bars – just before the new section begins – serve as an echo of what has already been heard.

The next section begins from bar 169. Prost suggests that the end of it should be bar 214, if we take the silence as indicative of a completed section. But if our criterion is the timbral quality alone, then we should regard the following bars (214-240) as a continuity of the preceding

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[276] Prost 'Nuits, première transposition de la démarche de Iannis Xenakis du domaine instrumental au domaine vocal', 68.

sonorities. We do not get any new material and therefore it could be said that this is an undivided big section. The glissando-based idiom used to preface the sopranos' entry at the beginning of the piece recurs here in the initial bars, albeit only briefly in its original character. As soon as this material is reasserted, the main sound for this section is a tremolando variant of this carried out by all voices. The altos' line is the one which moves away from this glissando context to act relatively independently. Xenakis seems to follow a satisfying sense of symmetrical structure. Thus, what happened in bar 14 and 15 from the altos' part is repeated here. This time the rolling of the consonant *r* twice in bars 180 and 185 reminds us of the artificial roll that Roland Barthes mentions when he refers to his favourite singer (Example 3.7).

> Panzera carried his *r*'s beyond the norms of the singer-without denying those norms. His *r* was of course rolled, as in every classic art of singing, but the roll had nothing peasant-like or Canadian about it; it was an artificial roll, the paradoxical state of a letter-sound at once totally material [...] [277]

In this section Xenakis scores for the first time double-notated consonants in order to lend the effect he thought of. He believes that 'Germans are the only people who pronounce consonants properly.'[278] The whispering parts introduced here are also a distinctively new material. The altos' part is the only one which does not participate in this, being dedicated to a more melodic process which secures the ongoing direction of the piece. What is particularly interesting is the way altos' clear and ethereal sonorities are combined with the abruptness of the soprano's tremolo effect in bars 190-197. From bar 214 and just before the final twenty three bars, we get a final revision of the musical character of the beginning of the piece. This time, unlike what happened in the immediate preceded bars, the familiar fluency of continuously intertwined voices is repeated generously as the piece approaches its epilogue.

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[277] Roland Barthes, *Image, Music, Text* (London: Fontana, 1977) 184.
[278] Varga, *Conversations,* 105.

The last bars, 241-264, form the coda of the piece which is different in character from the preceding bars in total. These last moments are used as an anticlimactic closing statement with the lower male part having a more important role than the others (Example 3.8). All the voices here sing sustained harmonic tones with the exception of the lower voice which has an active role, using contrasting dynamics. The tenor part is the first to fall silent and the basses are initially supported by the two other parts until the six conclusive bars, which finish the composition off in an uncomplicated, plain sonority. The cough heard at the end might serve as a reminder of its basic idea that this piece about the suffering nights of political prisoners. On the whole, what is heard at the end should be seen as a deliberate opposition to the ethos of the piece. The music proceeds from the frenetic dynamism of the sopranos' opening, to the motionless, almost breathless ending in the basses' part. This opposition reveals, in Xenakis's musical terms, the exploration of a human drama ranging from its rhetorical suffering to its final extinction. It is interesting how the composer finishes this work off. He uses an F𝄳 (three-quarters-sharp) and three different phonemes, each for each voice, maintaining the first letter and changing the last vowel (Yo, Ya, Ye). Thus, what we get at the end is a kind of a consonant vocal triad nicely done with the use of phonemes alone (Example 3.9).[279]

Harmonic relations

Nuits starts with a D# in the sopranos' line and interestingly, what we get from the successive entry of the other parts is relevant to the triad D F A, as if Xenakis had a tonal plan in his mind. The altos begin with an F# while the second section starts off with a persistent rhythmic figure based on D. The new melodic material introduced initially by the individual voices of altos in bars 89-91 starts from an F𝄲 (quarter-sharp), which initiates relevant harmonic departures of F𝄪 and D𝄲. The last bar of the second section ends on

[279] For a discussion regarding the use of phonemes in *Nuits* see Joëlle Caullier, 'Pour une interprétation de Nuits: Une proposition d'analyse' *Entretemps* 6, (1988).

an A and one of the predominant sustained tones in the next section is the F# briefly interacting with the D#. The piece concludes in a long-sustained F♯. Harley sensibly writes that 'while there are moments in which pitch structures are meant to be clearly perceived, pitch actually plays a relatively minor role in the whole work',[280] although the twelve-note chord in bar 84 should not slip our attention. However, in those works where long glissandi dominate, especially in Xenakis's string pieces, it is mostly the gliding sound that really matters and not the pitch articulation. In some cases, sustained sounds or unisons may be occurred on particular pitches such as that of A4 in *Nommos Gamma*, *Erikthon, Polla ta Dhina*, *Chant de Soleils*, *Akanthos*, and *Epei* or when each instrument plays a different pitch in thick clusters. As Xenakis's music becomes more refined and less glissando-oriented in the late years, the articulation of pitch takes up a more conventional and independent role.

In *Nuits* all the twelve voices demonstrated are confined to a both dialogic and synchronous interaction. The musical syntax is such that one tends to speak of a direct correspondence between the voices in the fashion of a tail[281] (interlocking voices), rather a hierarchic function. The altos discreetly seem to be more emancipated, but this occurs only sporadically and briefly. In the first section (bar 13), they sing independently and opposed to the main, undisturbed, glissando flow; in the second section (bar 89), it is again the altos that introduce a new musical argument; in bar 169 they initiate the recapitulation of the glissando sound, while a bit later in bar 190, as happened in the first section, the alto part is chosen to develop briefly an inner logic. By returning to the glissando sound towards the end of the piece, Xenakis wishes to summarise the main principle of this composition and to determine better its character. Since there is no theme in the conventional sense of the word and since the many heterogeneous sonorities disorientate the listener from the perspective of a musical consistency, the composer recycles the basic dramaturgy as heard at the beginning. The

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[280] Harley, *Iannis Xenakis* 55.

[281] Prost 'Nuits, première transposition de la démarche de Iannis Xenakis du domaine instrumental au domaine vocal', 66.

topicalities of split sonorities are frequent yet brief and certainly not at the expense of the cohesion of the piece. On the contrary, perceiving them as self-contained blocks, the piece itself is appreciated more positively as a whole and the listener gets an unusual aspect of development and progression. On a more metaphorical and speculative level, one could say that they represent the fast-paced adventures of life whether inside or outside prison. The 'cyclic' direction towards the end confirms the expectation of a disciplined musical thought. It is a musical work that despite the different and sometimes contrasting elements is based on a complementation process.

Brownian motion

The theory of Brown

Apart from the creation of a consistent sound world through certain instrumental techniques (notably *pizzicato* or *glissando*) in Xenakis's phonemic compositions, it is also important to examine his use of the natural phenomenon of Brownian motion as a compositional process. Brownian motion is used to describe the statistics of the random motion of a particle in liquids and it constitutes another example of a wider mathematical principle and stochastic process that Xenakis used in his work. This stochastic process generates a series of variables and each element in the series is influenced by the previous element. Brownian motion and random walks are both cases of stochastic processes. The motion in question was named after the British botanist Robert Brown (1773-1857), who was the first to observe with his microscope, in 1827, that pollen grains suspended in water experience a random, irregular motion. This motion is relative to the temperature and the size of particles; it is increased when the temperature is increased and it decreases when the particles used are large. The higher the temperature the more rapid the motion is.[282] In the ensuing

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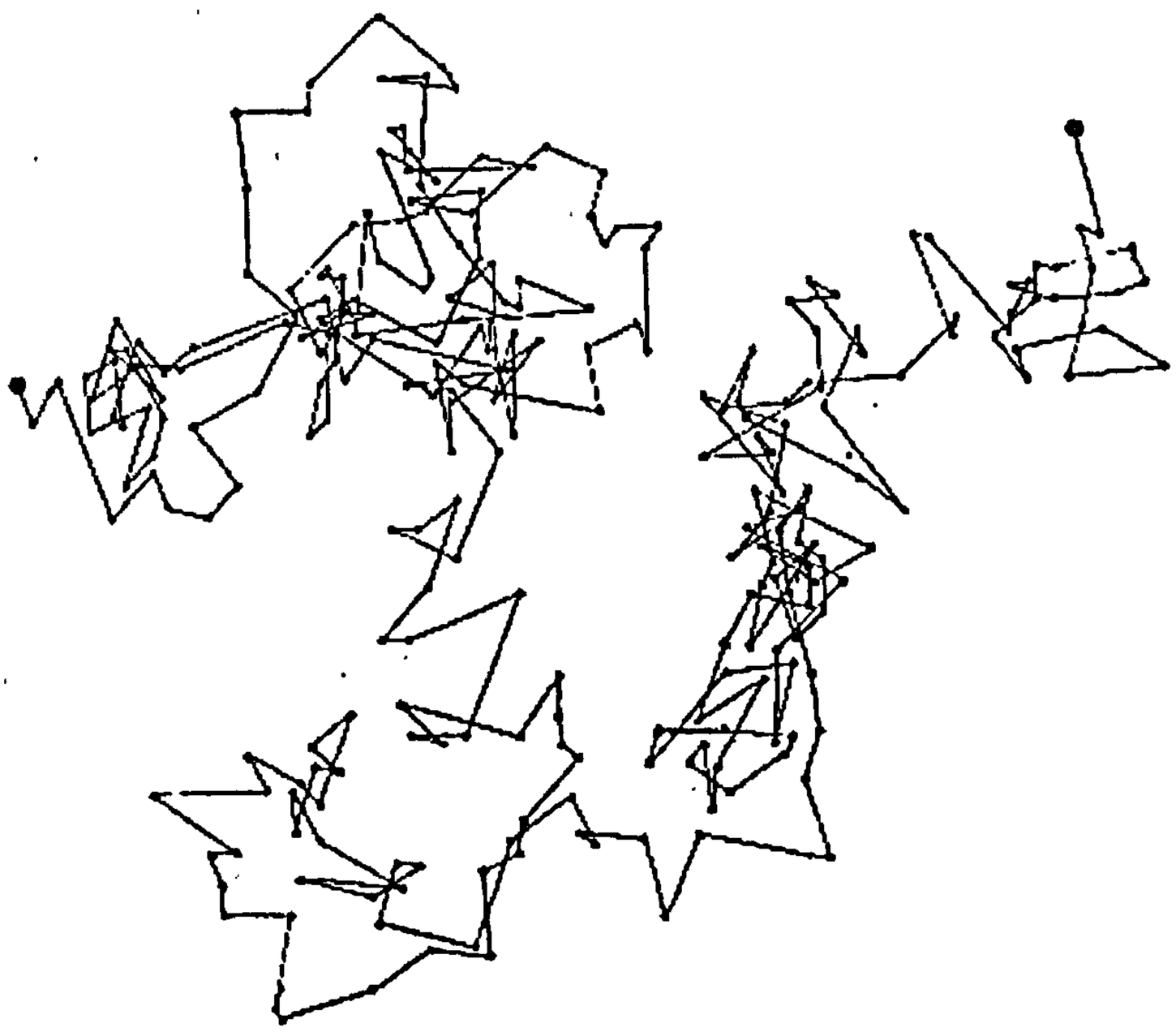
[282]**http://classes. yale. edu./fractals/** (Accessed 7 November 2005). This site (Yale University) contains information about the history of Brownian motion, explains some of his mathematical properties, and includes graphs that show the motion.

years the theory was advanced by various scientists including Albert Einstein who, in 1905, presented a further significant explanation of Brownian motion. In particular, he studied the dynamics of molecular collisions, observing that Brownian motion of pollen particles was the result of pollen particles being hit by water molecules undergoing thermal motion. The resulting zig-zagging pattern below (Figure 2) is a typical example of this motion, which seems to be going randomly forwards and backwards. [283]



We could also say that the general idea of Brownian motion can exist musically in a composer's mind if we think that the recurrence of a theme or a motif, for example, recycles the musical material and the music moves 'backwards' either through repetition or variation. Brownian motion seems to have a very undetermined motion backwards and forwards, but composers are able to think in both directions (past and present) and not

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http://www.britannica.com/nobel/micro/88_96.html This page discusses briefly Brownian motion and discusses Einstein's quantitative theory in relation to it. See also Einstein's book on this subject: Albert Einstein, *Investigations on the Theory of Brownian Movement*, ed. R. Fürth, translated by A.D. Cowper (1926, reprinted 1956). For the discussion on Brownian motion I would like to acknowledge the valuable comments by Dr. Leontios Hadjileontiadis and Dr. Tim Ward.

[283] The figure is taken from http://ww(w.doc.ic.ac.uk/~nd/surprise95/journal vol4/ykl/report.html, (Imperial College, London - Accessed 7 November 2005).

only forward. Therefore, although it might not be possible to have the exact musical representation of the Brownian figure, the idea can be accomplished either through spatiality or on a more theoretical and general level. The role of a hypothetical particle in a musical composition may affect aspects such as velocity or the movement of glissandi gestures.

Using the idea of Brownian motion, Xenakis retained his long-term allegiance to probability theory. Xenakis's personal voice speaks through his 'stochastic music' and the use of probabilities adopted for both the macro and micro aspects of his music. Brownian motion and 'random walks' are the results of such probabilistic distributions. The technique of a random walk is a controlled stochastic process used to determine random values related to compositional parameters (microstucture) with the aid of probabilisitc laws. Brownian motion is a limiting case of a random walk in a continuous-time process. Xenakis writes in *Formalised Music*:

> [But] what about waves representing melodies, symphonies, natural sounds[...]? The foundation of their nature and therefore of their human intelligibility is temporal periodicity and the symmetry of the curves. The brain can marvellously detect, with a fantastic precision, melodies, timbres, dynamics, polyphonies as well as their complex transformations in the form of a curve, unlike the eye which has difficulty perceiving a curve with such a fast mobility. An attempt at musical synthesis according to this orientation is to begin from a probabilistic wave form (random walk or Brownian movement) constructed from varied distributions in the two dimensions, amplitude and time (a, t), all while injecting periodicities in t and symmetries in a. If the symmetries and periodicities are weak or infrequent, we will obtain something close to white noise. On the other hand, the more numerous and complex (rich) the symmetries and periodicities are, the closer the resulting music will resemble a simple held note. Following these principles, the whole gamut of music past and to come can be approached. Furthermore, the relationship between the macroscopic or microscopic levels of these injections plays a fundamental role.[284]

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[284] Xenakis, *Formalised Music: Thoughts and Mathematics in Composition* ed. Sharon Kanach (N.Y: Pendragon Press, 1992) 289.

In this passage Xenakis talks of the structural characteristics of sound with particular reference to periodicity and symmetry, which are distinctive properties of waves that we recognise as having identifiable pitch at any rate. He rightly observes that the ear is more sensitive and perceptible than the eye regarding temporal transformations. It is therefore able to transform the sonic outcome (i.e. noise) into a single note by the adding of stronger and stronger symmetries. In creating various distributions in two dimensions (amplitude and time), the ear can perceive transformed symmetries in those dimensions. Assuming that the horizontal axis indicates, for example, time and the vertical axis indicates sound density, then this means that the density of sound can be predicted from the time values. Therefore, in a 2-d axial system, the corresponding value of the dependent variable is shown in relation to different values of the independent variable. Consequently, should we want to derive a 1-d illustration, we could use a standard sampling of time – for example one quarter of an hour – while giving the corresponding sound density for each time unit. In so doing, because we would essentially know the value of the time unit at any instance (since they progress by a quarter of an hour), we could then focus on the change of sound density. The same could be done with all the other parameters of sound.

Xenakis also refers to the domain of control (macro-level), which is mostly related to the musical structure that carries out the process of a piece and shapes its form. The domain of sound in the second paragraph refers to the conception of raw material, which can have some spectrum characteristics, ranging from noise (distribution of frequencies) to more specific harmonics (periodicities in time/specific pitches). Through this process, from noise, to periodicity, and symmetry, the composer may control the desirable final musical outcome, each time using the suitable raw material (sound). The characteristics either of a note or a section can be altered, affecting both the micro and the macro level. The interaction of these two levels is essential in Xenakis's oeuvre. In Granular Synthesis, for instance, small sonic grains of

milliseconds (micro-level) are used to generate large sonic textures (macro-level) controlled statistically by the composer.[285]

The 'white noise' that Xenakis mentions in the same passage is one of three methods to generate random sound through random process. 'Pink noise' and 'Brownian noise' are also types of noise. We could therefore describe it as acoustically colourless. It is the effect of the complete range of audible sound-wave frequencies heard simultaneously.[286] White noise can be produced by a digital sound synthesising device, which with the right processing by the sound designer can create various noises such as rain or waterfalls.[287] What is characteristic about this type of noise is that it is not structured sound (as it is random sound). As a result, the sound produced is very predictable. Brownian noise is also a random process, but in contrast to white noise the sound is strongly correlated. The category of 'pink noise' stands between the extreme randomness of 'white noise' and the extreme correlation of Brownian noise.[288] Xenakis's music is mostly characterised by the categories of white and Brownian noise. The orchestral clusters which are very typical of his music often include a wide range of sonorities (from cellos to piccolos and microintervals), is a good example of how Xenakis's sound comes close to the idea and result of white noise. Ligeti's *Atmosphères* could also be a good example of such sound. The target usually for composers is to modulate the pitches in such a way that they can include all the frequencies. By thinking in these terms, Xenakis freed his music, to a great extent, from the idea of 'pitch' and worked on the element of timbre as pure sound, mostly working on the glissando technique. Therefore the 'Xenakian noise' could be thought in the context of his philosophy on stochastic music, as the practice of generating massive sonorities.

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[285] The theory of granular synthesis was proposed by the physicist Dennis Gabor in the 1950s. Xenakis was the first composer to lay out a theory about sound grains, working all the calculations without a computer.

[286] www.whitenoise.at (Accessed 23 April, 2004).

[287] http://www.naturestapestry.com/whitenoise.html (Accessed 23 April, 2004).

[288] It is also known as 1/f noise as the power density decreases every 3dB per octave and it has a frequency distribution 1/f. Brownian music decreases 6dB per octave and therefore it has a frequency distribution $1 / f^2$, while in 'white noise' the power is independent from the frequency.

Mikka

In musical terms, Brownian motion could be observed in the melodic contour of a single instrument within an orchestral work, for instance, or even in the gesture of a larger section (mass) of a composition. Given the definition of the phenomenon as described above, regarding the mobility of the particle, composers need to decide how they wish to use the musical material in relation to the motion of the particle. This is, in general, the first step composers need to consider in advance whenever they make use of particular mathematical models. This practice enables the composer to 'model' the motion of the musical information as regards time and frequency. In Xenakis's case, he simply extended his stochastic method applied to previous works by using the idea of Brownian motion. This method was a solution in the form of micro-glissandi.[289] The physical direction and the speed of a particle were used either explicitly or implicitly in those compositions where Xenakis generated glissandi by employing 'random walks' procedures.[290] In general, if the notes are perceived as particles, which are moving on the musical surface, then their arrangement can be the result of the motion in question. This model can be applied to parameters, such as motion in time, space, and frequency that Xenakis used to achieve a musical end. In physics we cannot determine the position of a particle at a later stage, but we can often determine the probability of different positions.

In *Mikka*, Brownian motion is a macroscopic application of the phenomenon, which introduces a different way to organise and control form. Solomos writes:

> Taking the graphs of probabilistic sound curves, the only thing one has to do is to change their co-ordinates: the horizontal axis will be allocated to the time of instrumental music and the vertical axis will indicate the pitches and, finally,

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[289] Varga, *Conversations*, 105.

[290] In his doctoral dissertation (Yale University, 1996), Ronald James Squibbs writes that 'a random walk is a sonic configuration in which events are arranged in a relatively or absolutely continuous manner such that changes in pitch with respect to time proceed with relative unpredictability. . .random walks differ from stochastic configurations, in which the more radical unpredictability in the succession of events discourages the establishment of definite structural relationships among configurations.' 115.

> the graph will be converted into instrumental notation, as with the graphs of glissandi in the 1950s. The result is, in Xenakis's terminology for this compositional method, a 'Brownian movement' [...] whether we can hear Xenakis's' Brownian movements as good metaphors for the Brownian movements of physics is another question.[291]

Although it is difficult to say whether Xenakis's Brownian music is always a good (and perceptible) metaphor for the concept used in physics, we can be more confident in identifying the typical characteristic of Brownian sound in the piece *Mikka*, which perhaps best demonstrates how Xenakis applies the theory in question and how he 'plays' with it. As the music begins in *Mikka*, its melodic contour has a very limited range – a direct influence of the Brownian frequency distribution – and it sounds monotonous and unexciting in the opening bars (Example 3.10). But as the music progresses, Xenakis decides to digress from this unvaried microtonal pattern. He lends his composition an unpredictable and interesting effect (impulsive sound) with the use of big leaps that the soloist is asked to perform without slowing the speed down ('sans ralentir'), crossing the border between Brownian and white noise. By preserving the initial tempo, the change in style is even more distinct. Hence, Brownian motion here clearly influences the aspect of direction, with great changes in the register of the melodic contour played by the solo violin. Xenakis finds another way of partially organising his musical material, (that is through pitch and dynamics), while at the same time preventing his composition succumbing to the mercy of randomness.[292]

Mikka is a good example, which reminds us that what matters most is not the principle itself, but how it is used and how it works or, as Xenakis said in one of his interviews, 'all these are part of the game which is both conceptual and aesthetic.'[293] The musical result of his compositions support this statement. Xenakis made use of several mathematical theories, proving that different aspects of mathematics can be applied to music with different

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[291] Makis Solomos 'The Unity of Xenakis's Instrumental and Electroacoustic Music: The Case for 'Brownian Movements' in *Perspectives of New Music* 39, no.1 (2001): 244-252.
[292] Ibid.
[293] Philippe Albèra *Interview with Iannis Xenakis: A Homage to Xenakis,* 52. (Συνέτευξη με τον Ιάννη Ξενάκη'. *Ιάννης Ξενάκης: Ενα Αφιέρωμα του Εθνικού Μετσόβιου Πολυτεχνείου*, Αθήνα: Σύγχρονη Εποχή).

results. In his *Formalised Music,* for instance, Xenakis's comments suggest that that the theory of sieves can be also used to generate tonal music. The initial concept for Xenakis was that mathematics may act as a bridge between science and art. However, on its own, a concept is never sufficient for producing interesting results. Whenever Xenakis retained a strong interest in the rigorous application of mathematics, as in *Analoguique A* and *B* for instance, the sonic result came into being as an uncompromised translation of mathematical relationships and the musical outcome is less engaging for the listener. But such examples are not endemic in Xenakis's oeuvre. He writes:

> Here also, may we emphasize, a great liberty of choice is given by the composer. The restrictions are more of a general canalizing kind, rather than peremptory. The theory and the calculation define the tendencies of the sonic entity, but they do not constitute a slavery. Mathematical formulae are thus tamed and subjugated by musical thought.[294]

The case of *Mikka* clearly demonstrates that the initial and absolute application of Brownian motion at the beginning of the piece is 'disturbed' a few bars later by Xenakis, and made aesthetically more complex. One could point out that this is the case with any theoretical model – whether tonal, atonal, serial or stochastic. The model provides the necessary foundation upon which composers work and develop their ideas; but it is then up to them to decide which compositional principles to use and which parameters will affect and determine the musical outcome.

Cendrées

Concerning the vocal works, Brownian motion was used in *Cendrées* and *N'shima. Cendrées* is an intensely rich, large-scale composition which lasts more than twenty minutes. It requires a mixed choir of seventy-two voices (or minimum thirty-six) and an orchestra, as it seems that only the maximum number of singers would guarantee the emphatic volume that Xenakis seeks here. He concentrates mainly on glissandi gestures by both the orchestra and the choir and guttural attacks accomplished by the singers (which are also repeated in a very similar fashion in *N'shima*). In the

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[294] Xenakis, *Formalised Music,* 34.

opening bars there is a succession of ascending (random walk) glissandi played only by the orchestra, which offer an overwhelming feeling of density and solidity. These introductory bars in *Cendrées* determine the character of the piece and its overall form straight from the beginning (Example 3.11), indicating the influence of the natural phenomenon of Brownion motion in terms of velocity and direction. As the piece progresses, the combination of strings and voices results in a complex of micro-glissandi, moving rapidly and randomly. Thus the trajectories of the glissandi are greatly affected, and in turn they may affect parameters such as pitch.

The soprano's entry in bar 37 carries over the tone quality and the principal style of ascending sounds. Similarly, in the opening bars of *N'shima* Xenakis follows the same imitative schema, first introducing the theme in the brass and then restating it in the vocal line. In *Cendrées* the glissandi are supported by a sustained pitch – a cantus firmus with a siren effect – which enriches the horizontal and the vertical density of the piece.[295] The instruction 'abrupt attack from the back of the throat' written by Xenakis regarding the performance of certain vowels 'paralyses' the glissando progression and inverts the melodic process to a rhythmic interplay of vocal sounds.[296] This change first happens in bar 47, where aside from the emerging rhythmic figure by the voices, the orchestra is withdrawn temporarily. Thus Xenakis, having already introduced in the first fifty bars the two main aspects of that composition – that is the glissandi and the guttural attacks – allows in the immediate bars a brief interaction between them before developing his material further. What is typical in *Cendrées* is a broken sense of melodic continuity or sudden anticlimax that contrasts with actively unfolding music. This is achieved when the 'nuage' idea is carried out by the choir, sometimes in a staccato manner and mainly in bars 82, 247,

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[295] Whittall comments that Xenakis's music is characterised by a violent energy and vertical density. See Whittall *Musical Composition in the Twentieth Century*, 294. Surely, his glissandi must be a combination of both vertical and horizontal effect.

[296] As stated in the introduction, Xenakis said that he cannot see why the human voice should be treated in any special way. However, with the 'attack' technique the rhythmic function of the voices becomes more apparent as they are not intertwined with the glissandi.

and 349. In these cases there is a sudden interruption of a rich musical process followed by a plain, uncomplicated musical idea. In bar 82, the rhythmic voice of the basses is supported by an equally rhythmic sound of the bass clarinet to be followed by a discreet cello melody. Here, the Brownian glissandi are more perceptible in this more subtle and 'intimate context', as opposed to the massive glissandi gestures throughout the piece. The interaction of the voice and the cello is reminiscent of the final bars in *N'shima* where the amplified cello merges with the vocal line. In bar 250 Xenakis surprises the listener with a solo flute passage, which again rises suddenly out of a relatively busy moment in the previous bars, as a result of narrow random-walk glissandi.

Likewise in bars 300-348, we get a multilayered interaction of diverse material from all instruments that leads to a labyrinthine passage of chaotic polyphony, similar to *Nuit's* sonorous pandemonium in bars 159-165. In this long passage, the change in tempo and the random motion of the pitches probably best demonstrate the effect of the Brownian phenomenon with regard to speed and direction of the pitches, resulting in infinitesimal irregular and rapid melodic curves of microglissandi (Example 3.12). The music fades once more unpredictably, resulting in the naked melody of two voices, one singing guttural sounds and the other singing a sustained E as *cantus firmus*. *Cendrées* is a very dynamic piece that frequently reverses the textural quality of sounds, maximising the expressive potential of various sonic gestures yet achieving an overall unity. It is perceived on a massive[297], Xenakian scale carrying the tension and the power of a more complex process. Here, as in most of the composer's large-scale compositions, the musical effect and the way it is imposed upon the listener constitute the actual form of the piece. Since Xenakis is concerned with mass sonorities or galaxies of sounds, as he used to say, any melodic pattern that might arise in the course of a composition should be seen as accidental.[298]

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[297] It is written for 18 sopranos, 18 altos, 18 tenors and 18 basses and orchestra.
[298] In relation to such melodic patterns in *Cendrées*, Xenakis comments: 'In following a train of thought the corresponding music might produce something which is reminiscent of a melody. Am I to break the continuity of thought only to avoid that? Sometimes I do change but I don't care.'[298]

N'shima

With regards to *N'shima* Xenakis writes in the preface of the score:

> The melodic patterns of *N'shima* are drawn from a computer-plotted graph as a result of a Brownian movement (random walk) theory that I introduced into sound synthesis with the computer in the pressure versus time domain. I also applied this theory to creating linear paths in the pitch versus time domain[299] (melodic patterns) for voices and for instruments as in *Cendrées* (1974).

The effect of 'pressure' that Xenakis mentions here can be related to various parameters such us volume, timbre, or pitch, depending each time on what the composer wishes to achieve. If he opts for volume, for instance, then he 'models' the intensity of sound (*pppp* to *ffff*). But it should be made clear that the effect of the basic principle of Brownian motion can be applied to any musical parameter of a composition. The 'pressure versus time' curves of the waveforms are the result of stochastic calculations that enabled Xenakis to employ similar contours in the domains of fundamental frequency (pitch) and time in his works. These curves were inspired by the unpredictable and sudden motion of a particle. In musical terms the pressure is converted to pitch and melodic contours while the random-walk wanderings, the glissandi as continuous lines, change because of the 'pitch versus time' domain. This process can sometimes result in interesting music – as it happens with *N'shima* and *Cendrées*. In discussing *N'shima*, Harley writes: 'it is remarkable that the peculiar force of his [Xenakis's] scientifically trained intellect could give rise to powerfully expressive music.'[300] Through extra-musical references, Xenakis achieved a structural development based on rules which leave space for originality. The structural result may not belong to a definite and recognisable form, but it is conditioned by an internal, partially deterministic, unity.

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[299] In his interview with Varga, Xenakis explains that the 'pitch versus time domain' is music (pitches) in time. Since this was a relationship based only on the elements of rhythm and melody, he was interested in going further and creating something interesting with the sound itself. As Xenakis explains a bit later, 'what is perceived by the human ear is the result of changes in atmospheric pressure. Those changes occur in time [...] Every pressure is a value in time, which while changing draws a curve [...] When this curve is transposed to instrumental music, instead of pressure we have pitch. 'See Varga, *Conversations*, pp. 67 and 92.

[300] Harley, *Iannis Xenakis*, 94.

Solomos's discussion of Xenakis's Brownian motion includes *Mikka* and *N'shima*, but not *Cendrées*. This reference could have led to a more adequate discussion of Brownian motion given the connection between the two works. Dominic Gill writes on *N'shima*'s score: '...as the recent *Phlegra* was of the family of *Empreintes* so this *N'shima* is a cousin of *Cendrées.*'[301] Solomos concentrates his comments on the fact that 'the Brownian movements of *N'shima* are very different, as a sonic whole, from those of *Mikka.*'[302] He continues numbering the reasons for this difference, saying first that the ambitus of the glissandi in *N'shima* is smaller than that of *Mikka*, second that the glissandi are in general very brief in the first piece, and finally that again in contrast to *Mikka* the glissandi in *N'shima* are attacked *sforzando*. But why does this difference surprise Solomos? As seen above in *Mikka's* score, the composer does not hesitate to interfere in the mechanism of the Brownian process in order to make the piece more interesting. Therefore it is not surprising that the sonic outcome of *Mikka* and *N'shima* is different even though both pieces are modelled on Brownian motion. The musical result is not expected to be the same because aesthetic criteria are also taken into serious consideration by Xenakis. There is no absolute approach to such processes, but a direct connection between theory (science) and the composer's personal choice (aesthetics) on an interactive level. Of course the degree of such interaction is again the composer's choice. He or she is expected to decide how strictly a mathematical theory will be applied to music. For this reason Xenakis's works based on Brownian motion are different when it comes to the actual musical result. The different effect in *Mikka, N'shima* and *Cendrées* is also a result of the nature of each composition. *Mikka* is a piece for solo violin and therefore its timbre, contour, and the natural phenomenon of Brownian motion can be seen to emerge explicitly.

N'shima (Example 3.13) is a score written for two mezzo-sopranos or altos and five instrumentalists (2 horns, 2 trombones and 1 cello). The expressive details of the music are enhanced by the presence of two female voices and

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[301] Dominic Gill, *The Financial Times* March 2, 1976.
[302] Solomos, 'The Unity of Xenakis', 249.

the dynamic contrast with the instruments. If the Brownian phenomenon is characterised by irregularities, Xenakis aims for this particular effect in *N'shima*, which should be performed as one movement continuous to the ear. The Brownian wanderings in the cello line are particularly distinctive, although the whole ensemble is affected by the motion (Example 3.14). The cello part offers a diversified handling of the glissando melody and its melodic range is far more wide and flexible compared to the other parts. Apart from the fact that it breaks the rhythmic narrative of the rest of the ensemble with its fluid glissandi, it is noticeable that the tempo changes almost every time a cello melody is introduced, indicating the effect of Brownian motion in terms of speed (bars 76, 231, 241, 246, 252, 386), enhancing the sense of random motion and leading to an unpredicted acceleration in bar 115.

Similarities between *Nuits* and *Cendrées*

In all three works (*Mikka, N'shima, Cendrées*) the use of glissandi is a characteristic feature as in the majority of Xenakis's compositions. They function like the main theme in a set of variations; distinctive but altered. Iliescu rightly links the 'glissandi variation' to Xenakis's *Mikka* for solo violin, with the application of Brownian motion.

In both *Nuits* and *Cendrées*, the opening secures a very distinctive and compelling sound with a great degree of energy and power. Even in *N'shima*, which is a chamber, small-scale work, the urgency of a 'primitive' expression is evident from the first bar with the trombone's confident attack. However, what always happens in the concluding bars is that the tension of the music as demonstrated throughout the composition finds a permanent release in the last moments. Out of the frenetic, interlocking polyphonies, we are left with an unpredictable reduction of sonic material. In *Nuits* this reduction (bars 241-264) comes to an end in a vocal consonant triad as we have already discussed, while *N'shima* ends with an unresolved fading of the cello. In the last bars of *Cendrées*, Xenakis introduces for the first time the 'nuage de sons fantômes' idea (cloud of phantom sounds), which

succeeds an active and dense vocal passage. In return, the music literally disappears and the piece finishes with a delicate sense of whispering. Although *Cendrées* is a piece heavily based on glissandi, the technique in question does not remain as constant and linear as in *Nuits*, but appears to emerge as sudden waves of a particular force and intensity. Likewise in *Nuits* Xenakis starts off with immediate glissandi to depict the condition of agony and suffering of the prisoners accomplished with the sopranos' cataclysmic singing.

Similarities between *N'shima* and *Cendrées*

N'shima is a piece born out of *Cendrées*: very expressive, with guttural attacks, random-walk glissandi, and a distinctive rhythmic pulse. Because this is a chamber work, which does not bear *Cendrées*' volume and intensity, all these qualities appear to have a straightforward effect in *N'shima*. Many of the specific techniques and symbols that we find in *Cendrées*' score, such as the exact delivery of certain vowels, the throaty sounds, the 'silent' (phantom) vocal passages of breath, reappear here as well. Not having heard or looked at *Cendrées*, it would have been easy to assume that the above elements were meant to reflect *N'shima*'s nature, given its Hebrew title (breath). In considering its overall music, both the brass instruments and the two voices assert a strong rhythmic ethos throughout the piece while the cello stands apart from these rhythmic patterns, resorting to glissando passages and playing freely almost on its own in the course of the piece. It seems to enjoy independent, melodic parts that come as a response – or even as a disagreement – to the rhythmic interplay between voices and brass instruments. This independence is also mirrored in the pitch range, which is less than two octaves for the voices and the brass instruments while the cello's range is notably much wider, suggesting that Xenakis is interested strictly in the rhythmic and melodic qualities respectively. Thus for bars 77-83, 140-144, 231-237, 241-244 and 246-247 the cello plays its own expressive and functional role and it is only later that it gradually seeks integration. First it encounters the vocal 'breath attacks' (bars 251-269) and secondly it confronts at length a rhythmic

passage in the voices (bars 391- till the end), which in the final bars seems to be defeated by the cello's determination. In the context of this light opposition between the cello and the rhythmic parts, unpredictable, silent moments appear to be an additional concern (bars 11-12, 33-35, 41, 50, 75-76, 138-139, 372, 374, 376, 378, 380, 383, 390), which in the main have a syntactical role and are placed at the end of specific musical phrases.

In *N'shima* there are no abrupt changes in tempo or a sense of accelerated gestures and aperiodic melodic contours. There is a stepwise motion with distinctive rhythmic vocal attacks forming the musical texture. Occasionally, the cello interrupts the rhythmic character of the other instruments to offer linear, glissandi passages, affecting the overall texture at a local level. From a musical point of view these interventions give the impression of a transformation from order to disorder. In the cello passages the tempo indication becomes faster, affecting the velocity (bars 76, 140, 231). Looking at the score it seems as if Brownian motion only affected the cello melody, which moves irregularly, lending a random, dramatic quality. The sense of wandering particles is evident in all these compositions with the help of glissandi, which play a distinctive and diverse role in each case. In *N'shima*, the Brownian wanderings are less explicit than in other works, perhaps because the voice here is placed in a spiritual context and the motion forms a less tangible gesture.

In conclusion, even though the correlation between a mathematical model and its musical representation in Xenakis's compositions could be more explicitly explored in a study of a different kind, in line with this thesis's objectives, I have observed Brownian motion for its metaphorical use in Xenakis's work to better understand the creative interventions he applies to this model.

The theatre of cruelty

The vast majority of Xenakis's compositions display a genuine 'cruelty'. They revive in musical terms the composer's experience and suffering during the wartime years. This feeling of fierceness and brutality is particularly prominent in *Nuits* and *Cendrées*. With the abstract use of voice and the serious instrumental character of these compositions, this echo is of a 'political crowd of hundreds or thousands of people [...] it is an event of great power and beauty in its ferocity'.[303] And without doubt, this is exactly what Xenakis achieves; a paroxysm of violent beauty, a representation of an era of unrest. The value and the impact of Xenakis's ferocity in his phonemic works reminds us of the term 'The theatre of cruelty' coined by Antonin Artaud in the 1930s. Antonin Artaud (1896-1948) French poet, playwright, director and actor is regarded as one of the most eminent, eccentric, and influential twentieth-century theatre theoreticians. In his writings, especially in *Le Théâtre et son Double* in 1938 (The theatre and its double), we come across the notion of an experimental theatre that includes 'The Theatre of Cruelty'. Due to chronic mental problems, Artaud received psychiatric treatment for several years in various institutes. The development of his mental state, alongside a long-term drug use, had a definite impact on Artaud's artistic life.[304] He writes:

> I employ the word 'cruelty' in the sense of an appetite for life, a comic rigor, an implacable necessity, in the gnostic sense of a living whirlwind that devours the darkness [...] Everything that acts is a cruelty. It is upon the idea of extreme action, pushed beyond all limits [...] The Theatre of Cruelty proposes to resort to a mass spectacle; to seek in the agitation of tremendous masses, convulsed and hurled against each other, a little of that poetry of festivals and crowds when, all too rarely nowadays, the people pour out into the streets [...] the images of thought can be identified with a dream which will be efficacious to the degree that it can be projected with the necessary violence.[305]

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[303] Xenakis, *Formalised Music*, 9.
[304] See Bettina L. Knapp *Antonin Artaud: Man of Vision* (Chicago: Swallow Press,1969), Martin Esslin *Artaud* (London: John Calder, 1976), Albert Bermel *Artaud's Theatre of Cruelty* (New York: Taplinger Publishing Company, 1977), Edward Scheer (ed.) *Antonin Artaud: A Critical Reader* (London and New York: Routledge Press, 2004).
[305] Knapp, *Antonin Artaud*, 91-92.

Artaud here speaks of 'the agitation of tremendous masses' and the 'necessary violence'; a parallel thinking with Xenakis's 'political crowd' and 'ferocity'. As would have been expected, modernist composers welcomed Artaud's ideas and were influenced by the strength of his vision and the emphatic sense of violence and extremity that he declared, not the one which Futurists wished for, but the brutality underlined by an aesthetic condition. Boulez stated after the Second World War that music should be collective spellbinding and hysteria, violently real, following the direction of Antonin Artaud.[306] This declaration could be seen first as a typical modernist approach to the objectification of sound and second as an 'concomitant' of a post-war psychology deeply marked by the war's cruelties. The Americans David Tudor and John Cage were equally impressed by the writings of the French dramaturge. For Tudor, Artaud's theories changed his musical thinking impressively. 'All of a sudden I saw that there was a different way of looking at musical continuity [...] it was a real breakthrough for me, because my musical consciousness in the meantime had completely changed'.[307] Cage favoured specifically the notion of 'profound anarchy' when Tudor introduced him to the world of Antonin Artaud and in particular to his thoughts regarding language and the treatment of words.[308] Another twentieth-century composer who became influenced by the theoretical writings of the French dramaturge was Wolfgang Rihm (b. 1952) who has based some of his compositions on Artaud's scenarios. For instance, the music for the Tutuguri works, the stage piece *Die Eroberung von Mexico* and also the Seraphin compositions.[309]

Edgard Varèse was friends with Artaud and become influenced by his writings.[310] His piece *Ecuatorial* (1934), for solo bass and orchestra, is based on Maya's sacred book Popol Vuh (Book of Counsel) and reveals

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[306] Matossian, *Xenakis*, 45.
[307] *The Cambridge Companion to John Cage* ed. David Nicholls (Cambridge: Cambridge University Press, 2002) 171.
[308] Ibid.
[309] See Josef Häusler 'Wolfang Rihm' *Grove Music Online* ed. L.Macy (Accessed 19 October, 2004), http://www.grovemusic.com
[310] In one of his letters Artaud wrote that he loves Varèse's music without having heard it, while in one of Varèse's letters the composer asks from Artaud if he could have a copy of 'The Theatre of Cruelty.'

some of the secrets of their civilisation. It bears the immediate impact of Artaud's favouring of linguistic abstraction. But despite this affinity, the piece lacks the techniques that would establish an Artaudesque sense of communication, direct and shattering. Most probably Varèse's version of Artaud's aesthetics is confined to his ideas of non-literal and non-verbal means of communication. However, the music along with the abstract syllables do not correspond exactly with Artaud's unrefined art and cruelty.

Xenakis's musical theatre comes closer to Artaud's ideas and invites comparison with them. There are striking similarities between the aesthetics of the two men. When Bermel suggests that 'The kind of theatre Artaud envisaged would use the classics but only after subjecting them to a radical overhaul',[311] that reminds us of Xenakis's thinking that contemporary music should be looking at the past involving at the same time an experimental approach. Artaud, like Xenakis, encountered the oriental theatre and became enraptured by it. It was in 1931 in Paris when Artaud wrote two essays regarding the oriental theatre; 'On the Balinese Theatre' and Oriental and Occidental Theatre.' Although his major influence was the Balinese theatre, Artaud also drew his techniques from *Noh* Theatre which Xenakis particularly admired.[312] Both artists were attracted by the 'totality' that oriental theatre can offer in terms of music, dancing, acting and singing, acknowledging that this is certainly an unfamiliar art to the Europeans. Artaud writes that the Oriental concepts differ from the European conceptions of theatre and Xenakis comments that the slow recitation of the text is monotonous for a European.[313] Artaud's art aligns itself with the principles of the Wagnerian *Gesamtkunstwerk*,[314] seeking exactly the same totality as Xenakis did. Artaud in particular was impressed by the gesture and facial expressions in Balinese theatre and also by the unimportant role delegated to the spoken word.[315]

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[311] Bermel, *Artaud's Theatre of Cruelty*, 14.
[312] Ronald Hayman, *Artaud and After* (Oxford: Oxford University Press, 1977) 86.
[313] See Knapp, *Antonin Artaud*, 86 and Matossian, Xenakis, 146.
[314] Bermel, *Artaud,* 89.
[315] Knapp, *Antonin Artaud*, 84-5.

Artaud's theatre of cruelty is accomplished by the sound of the voices and the actors' gestures. He wanted the spoken material to be explosive in sound and unnatural in its delivery.[316] It is therefore the prompted voice, not necessarily the words that forms one of the fundamental techniques of Artaud's 'cruelty'. The act of performance becomes crucial through the delivery of the text and the voice of the actor is expected to arouse the spectator's interest.[317] Artaud, like Wagner, sought the experience *per se* as a means for his total theatre. He did not prescribe precise techniques to achieve this, but it was the drama itself through the delivery itself that helped the audience to experience Artaud's cruel sensation. Many of Xenakis's works are based on phonocentric texts and his own theatre of cruelty lies outside the realm of spoken world, beyond the domain of language. But the most important thing is that in both cases the term 'cruelty' is related to a 'physical' aspect of art whether on a metaphorical level or a literal one. The first is related to the impact that each art can exercise upon its audience and the second one with the idea of space and its physical dimension both in theatre and in music.[318] Artaud's cruelty is connected with the 'idea of metaphysics which emerges out of a new utilisation of gesture and voice',[319] and his metaphysics is 'a type of artistic investigation that goes beyond the physical or outward limits of the art...'[320] Likewise Xenakis's music has been described as 'directly physical', able to stimulate equally both the spirit and the body.[321] His phonemic works, notably *Nuits* and *Cendrées*, born out of the cruelty of two different totalitarian regimes in Greece and Portugal, give forth a natural force. What made an enormous impact on Xenakis's music is the anonymous demonstrations on the streets of Athens and the political slogans heard by thousand of voices:

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[316] Bermel, *Artaud*, 62.
[317] Helga Finter, 'From Antonin Artaud and the Impossible Theatre: The Legacy of the Theatre of Cruelty' in *Antonin Artaud: A Critical Reader* ed. Edward Scheer (London: Routledge, 2004) 53.
[318] As written, Artaud's theatrical language comes out of different elements such as sound, gesture, and the exploitation of space. See Bermel, *Artaud*, 28.
[319] Hayman *Artaud and After*, 77.
[320] Bermel, *Artaud*, 20.
[321] Christine Prost, 'Oresteia at Mycenae' in *A Homage to Iannis Xenakis*, 66.

> All of us have observed the sonic phenomena of a big political crowd of dozens and hundreds of people. The human river delivers a slogan of the same rhythm. The city is full of this roar, the restraining force of the voice and the rhythm is ultimate. It is about an event particularly intense and beautiful in its cruelty.[322]

In Xenakis's case, reality becomes art in an aggressive and unlyrical yet real way. And perhaps this is the fundamental difference between Xenakis and Artaud. Xenakis's music, almost a metaphor, emerges as an echo of his wartime experience. Artaud's art is first developed conceptually and then it becomes reality. However, in both cases, the audience – listeners or spectators – encounter a consequence of a modernist drama whether it is 'the theatre of cruelty' or the music of 'insensibility'.

Xenakis's phonemic works move away from ancient Greek dramaturgy, from the implications of the classical texts and their stage presence. But even here, the composer retains another kind of drama, contemporary and abstract through the universal language of phonemes. The dramatic advantage in his phonemic compositions is the use of voice itself which is the principal instrument for this role. With *Nuits* and *Cendrées* – Xenakis's major phonemic works – the composer assures his lifelong devotion to individual freedom and the value of democracy. The consequences of war were for Xenakis a daily encounter through his memories, his facial trauma, and his exile. He never gave up his ideological concerns. With the two military juntas in Greece and Portugal and the deprivation of both civil and human rights for the people there, Xenakis wrote music dedicated to them, to the thousands of anonymous political prisoners. *Nuits* and *Cendrées* were written with the vehemence of a political drama and the cruelty of a totalitarian situation.

Another dimension to Xenakis's music is his fascination with nature. For example, *Lichens*, refers to the organisms of the Arctic environment; *Sea Nymphs* denotes his long-life attraction to the sea; and *See Change* was dedicated to his wife for their kayaking experience in Corsica. Further examples include *Anemoessa*, 'exposed to the wind', *Embellie* 'lull in the

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[322] Xenakis, *Essays in Music and Architecture*, 73.

storm', and *Nyuyo* 'setting sun'. Perhaps the most characteristic is the description in the score of *Terretektorh:*

> A shower of hail or even a murmuring of pine-forests can encompass each listener, or in fact any other atmosphere or linear motion either static or in motion. Finally the listener, each one individually, will find himself either perched on top of a mountain in the middle of a storm which attacks him from all sides, or in a frail barque tossing on the open sea, or again in a universe dotted about with little starts of sound, moving in compact nebulae or isolated.

Likewise, regarding his *Polytopes* Xenakis speaks of his dream about two moons in the nocturnal sky.[323] Thus the role of nature is another significant extra-musical consideration and probably a poetic counterbalance to the principle of his stochastic music (control of mass events and passage from order to disorder). But perhaps the most important argument is that his mathematical models and his various scientific borrowings did not manage to overshadow Xenakis *musical* thought. The music in both *N'shima* and *Cendrées* is accomplished not through the composer's strict application of the Brownian phenomenon, but through his personal choices and aesthetic criteria.

With his phonemic works, Xenakis reasserts his compositional principle of glissando and also, perhaps for the first time, he reflects emphatically on human suffering. The man of mathematics allows his personal feelings to be both converted into and exposed as sounds. It is Xenakis's voice emerging into this ocean of penetrating voices. It is he who screams: 'To you, unknown political prisoners and thousands of forgotten ones whose very names are lost'.[324] This surge of sounds echoes the composer's memories of wartime and could not be anything else but a demonstration of self-enclosed, shocking sonorities. There is no lyricism in Xenakis's compositions. The composer himself confesses that 'life killed it in him.'[325] Milan Kundera described Xenakis as 'prophet of insensibility', claiming that the beauty of his music is a beauty clear from the stains of affection,

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[323] Matossian, *Xenakis*, 50.
[324] This is the composer's dedication written at the beginning of the score.
[325] Varga, *Conversations,* 63.

deprived of sentimental torture.[326] Xenakis 'created some of the later twentieth century's most piercing musical laments'.[327] *Nuits* and *Cendrées* are certainly the most typical and perhaps the best known of these lamentations; a musical reflection, a universal lament, which illustrates vividly the horror of an unwelcome occupation.

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[326] Prost, 'Nuits Première Transposition', 71.
[327] Arnold Whittall, *Musical Composition in the Twentieth Century*, 295.

Chapter Four: 'Singing death: solo works'

In this last chapter I shall discuss Xenakis's works for solo voice written for the performer Spyros Sakkas. Sakkas was born in 1938 in Athens and studied vocal music at the Conservatoire in Athens and at the Mozarteum Music Academy of Saltzburg. He started his career at the Braunschweig Opera in Germany and since then he has taken part in the most prestigious music festivals worldwide. Sakkas's repertoire includes a wide variety of styles ranging from Baroque music to Lied and Romantic Opera. He has particularly excelled in contemporary music and many composers wrote music exclusively for his voice, including Cage, Crumb, Koering, Hadjidakis, Aperghis, and Xenakis.[328]

As stated in the first chapter, those works – *Aïs* (1980), *Pour Maurice* (1982), *Kassandra* (1987), *La Déesse Athéna* (1992) – have their own artistic identity and since they were composed in the span of twelve years they can also be grouped and studied together. Although here there is no new approach to the treatment of the text (the source is again either ancient Greek literature or abstract phonemes), these compositions certainly throw a new light on Xenakis's vocal music, diversifying his writing. *Aïs* and *Kassandra* are perhaps the best known and important of those solo works and they will be discussed at length later on. The objective of this chapter is to assess separately these compositions for solo voice, a type of music that Xenakis never wrote before, and to look at his relationship with Sakkas and how his voice influenced Xenakis's writing. I shall examine the subject matters and the cultural context of these works, extending my discussion to the characteristics of the composer's late period.

Virtuosity without limits

Apart from the solo vocal pieces, Xenakis wrote a number of other solo works for various instruments, including music for piano (*Herma*, 1960-61;

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[328] Notes from the Programme on *Oresteia* of Megaron Concert Hall in Athens (Press Archive).

Evryali, 1973; *Mists*, 1981; and . *à.R*, 1987), cello (*Nomos Alpha,* 1966 and *Kottos*, 1977), violin (*Mikka*, 1971 and *Mikka 'S'*, 1976), organ (*Gmeeoorh*, 1974), percussion (*Psappha*, 1975 and *Rebonds*, 1988), double bass (*Theraps*, 1975-76), harpsichord (*Khoaï*, 1976 and *Naama*, 1984) and trombone (*Keren*, 1986) as well as other compositions for a solo instrument and an ensemble or orchestra. Most of the above were written for specific performers in mind, performers who had managed to impress Xenakis both on a mental and a technical level. In one of his interviews Xenakis declared that there are three things he was looking while writing music either for individuals or even for an ensemble: dedication, 'technicity' (virtuosity) and friendliness.[329] The seemingly unplayable yet fascinating *Herma* was commissioned by the Japanese pianist Yuji Takahashi whose playing was as attractive to the composer as his mind.[330] With this piece Xenakis inaugurated his output of solo music. Thereafter he also wrote piano music for the performers Marie-Françoise Bucquet (*Evryali*) and Claude Helffer (*Erikthon*, 1974) for solo piano and orchestra. *Mists* for solo piano, *Keqrobs* (1986) for solo piano and orchestra of 92 musicians and *Paille in the wind* (1992) for piano and cello were composed for Xenakis's friend and avant-garde pianist Roger Woodward and the cellist Jacopo Scalfi. *Gmeeoorh* was the only organ piece he composed and it was written for the performer Clyde Holloway,[331] while *Khoaï* was written and dedicated to the renowned harpsichordist and friend of Xenakis, Elisabeth Chojnacka,[332] who also premiered *Naama*[333] and later *A l'île de Gorée* for amplified solo harpsichord and ensemble. *Keren* (trombone in Hebrew) is the third piece of his, after *N'shima* and *Shaar* (1993), which bears a Hebrew name and it was

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[329] Audio interview, (BBC archive, 1997).

[330] In his conversations with Varga, Xenakis recalls that Takahashi managed to pay off only partly this commission, but in the end he did not mind much as he was a brilliant pianist who after a few months he could play *Herma* by heart. See Bálint András Varga, *Conversations with Iannis Xenakis* (London: Faber and Faber, 1996) 40.

[331] A distinguished American organist who taught at the music department of Indiana University while Xenakis was also there.

[332] A Polish harpsichord, performer, who has premiered music by Ligeti, Penderecki, Bussotti, Gorecki, Xenakis and other contemporary composers. She has also worked many times with the Xenakis ensemble for various performances and recordings. As in the case of Takahashi, Xenakis wrote a piece for Chojnacka after a personal request of hers.

[333] Interestingly, Xenakis in his conversations with Varga admits that the Finnish harpsichordist and composer Jukka Tiensuu is the only one who has played and recorded remarkably well his piece *Khoaï*.

written (and premiered) for the Israeli Benny Sluchin, while the famous *Psappha* and the much later *Rebonds* were written for the percussionist Sylvio Gualda,[334] who collaborated with other favourite performers of Xenakis such as Chojnacka (*Komboi*, 1981 and *Oophaa*, 1989) and Sakkas (*Kassandra*, 1987).[335]

Most of his solo works were written for specific musicians whom Xenakis had already encountered. It is possible that he attempted not only to provoke, but also to transform their technical skills. This was achieved by the performers' own hard work and admiration for his music (most of them requested Xenakis to write a piece for them) and also by having a close collaboration with the composer. This collaboration always included a mutual respect and acceptance, which was the result of Xenakis's friendly relationships with his soloists. Sylvio Gualda's comment on this in 1980 is characteristic:

> Xenakis and I are connected with a friendship, a mutual respect, which has not been discontinued in the course of the years. And while I much admire his breadth of knowledge, I have also been moved with his presence that is always careful and worthy of the music and the people.[336]

Xenakis's demands on the musicians are not confined to technical dexterity, but parallel what Berio used to call 'intellectual virtuosity' or as Marc Couroux describes it – following his experience of *Evryali* – 'critical virtuosity'.[337] Xenakis's consistent indication 'sans vibrato' concerns the performer's personal detachment from his or her own feelings and the

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[334] Performer and teacher. Gualda studied at the Conservatoire de Musique and from an early stage showed an intense interest in contemporary music. Today he is regarded as one of the most eminent percussionists in the world. In 1968, Gualda founded the music ensemble *Puissance 4* with Katia and Marielle Labèque while in 1981 he created with Chojnacka a duet of harpsichord and percussion.

[335] Also the conductors Michel Tabachnik and James Wood, the Arditti String Quartet, Les Percussions de Strasbourg, the pianists Roger Woodward and Peter Hill have also premiered and performed Xenakis's music. For the Arditti Quartet Xenakis commented that 'they can hold the sound with undiminished beauty' Varga, *Conversations*, 158. The cellist Rohan de Saram is a member of the quartet in question and also premiered the last *Sequenza* for cello, that Berio composed (in 2002), plus Xenakis's *Epicycle* (1989) and *Roscobeck* (1996).

[336] Sylvio Gualda 'For Psappha'„ Xenakis, *Essays on Music and Architecture*, 63.

[337] Marc Couroux 'Evryali and the Exploding of the Interface', *Contemporary Music Review* 21, no. 2-3, (2002): 54.

objective reading of the score. This task is not always a feasible target either because of the performer's musical training or because of his or her natural inability to sing without vibrato. It is interesting to note Xenakis's view that performers need to master themselves in order to master the technical difficulties,[338] a comment particularly related to his pieces of exceptional difficulty. However, finding a method of composition that allowed him to accurately calculate and control structural relationships was not enough. Xenakis took care to establish regular collaborations with specific performers in the hope that they would fully understand his language and choose the best solutions for interpretation.[339] As Harley notes, for the demanding solo part in *Dox-Orkh* (1991), the composer took advantage of his long-term collaboration with Irvine Arditti and he adopted a kind of notational shorthand to facilitate his performance.[340]

Xenakis's meticulously written scores pose considerable technical problems that demand to be solved by the musician's imagination, skills, patience, and dedication. Complex clusters and counterpoint, uncomfortable or even impossible stretching of the hands, rhythmic glissandi, unusual sonorities, percussive attacks on the harpsichord, microtonal singing, unfeasible chords are only a few of the technical issues facing the performers. Xenakis's scores require unconventional thinking in approaching the conventional notation. Those who have attempted to interpret his music feel challenged (and exhausted) both mentally and physically. Further to this demanding relationship between the performer and Xenakis's scores, Peter Hill remarks that 'more fundamental, and at times more intractable, is the problem of the learning process'.[341] The interpreter is more likely to benefit from Xenakis's comments regarding the context and concept upon which a musical work is based and less from the discussion of specific technical areas. Roger Woodward writes regarding *Keqrobs*:

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[338] Varga, *Conversations*, 66. Xenakis recalls, for instance, that because Marie-Françoise Bucquet was a pupil of Brentel used to add a lot of expression when it was not required.
[339] Email correspondence with Irvine Arditti (December, 2005)
[340] Harvey, *Xenakis*, 210.
[341] Peter Hill, 'Xenakis and the Performer', *Tempo* 112 (1975): 21.

> I carried a little notebook about with me incessantly, complete with my own 'grand plan' in which I wrote questions either to myself or to the composer about matters that had to be resolved quickly or that might have to be resolved in the longer term. I was determined not to ring him [Xenakis] more than three times during the entire period of the learning process and kept my word. However, to my complete bewilderment, he once replied: 'I don't know!'[342]

Xenakis, like many other contemporary composers, did not hesitate to push performers to the limits of their ability with the belief that what is considered to be a limitation today it may not be in the coming years.[343] However, limitations concerning the stretching of a pianist's hands, for instance, are unlikely to be changed in the future. Xenakis probably bases this assertion on the assumption (and hope) that performers, and especially new interpreters, would treat a piece of music as an open-ended work, subject to a continuous germination of ideas. The notion of perfection will be an ongoing process and performers will be seeking different solutions to the same problems. Such solutions may range from significant score reductions (Peter Hill, *Evryali*) to the control of physical weight (Roger Woodward, *Keqrobs*). But are interpreters more obsessed with notational perfection when it comes to the actual performance than Xenakis himself? Despite the fact that his scores rife with thousands of notes, precisely notated, Xenakis was concerned of other things during a performance. The conductor James Wood remembers:

> I worked very often with Xenakis, regularly from 1984 until his death. He was always very easy to please, and I sensed he was more interested by the audience reaction than in the quality of the performance. He was concerned with the overall duration of the performance and the overall form of the music

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[342] Roger Woodward, 'Preparations for Xenakis and Keqrobs' *Contemporary Music Review* 21, no. 2-3, (2002): 111-112. In the same article, Woodward writes that Xenakis explained the significance of the title (*Keqrobs*) in Greek and the story related to it, derived from the Greek mythology. With these thoughts and feelings he began learning the score (p111).

[343] Varga, *Conversations*, 65. Similarly when Irvine Arditti told Xenakis that it was impossible to play the very fast glissandi in *Mikka*, covering more than three octaves, the composer replied that it might be difficult now, but in the future he would find a way to do it. See Irvine Arditti 'Reflections on performing the string music of Iannis Xenakis.' *Contemporary Music Review* 21, no 2- 3 (2002): 85.

> – whether it was paced correctly. Xenakis was rarely bothered about whether someone sang a wrong note. He cared a lot about the vocal style.[344]

Likewise, the violist Irvine Arditti and the soprano Linda Hirst talk of the 'right character' and the 'right attitude' respectively as being more important to Xenakis than technical accuracy.[345] There is a sense that despite the prevalence of the local detail in his scores, performers are invited to go beyond the notes in search of something broader. This is especially noticeable in Xenakis's string music; the notated pitches in the glissandi passages are the least important things for performers to emphasise.[346] We should point out, though, that although Xenakis was more interested in the overall style of his works than the technical accuracy, he almost never writes expressive indications in his scores. The suggestion in *Akeas* (1985), for instance, that the music should be performed with 'pessimistic warmth' is certainly not characteristic. The ambiguous relationship between score and performance in Xenakis's music may arise the question why the composer preferred to use a graphic notation in the sketches and a conventional one in the final version. In some cases, it is the publishers who expect a fixed notation from composers, which could be disregarded by either performers or composers themselves, when they play their own music.[347] Things become a bit more complicated when it comes to Xenakis's piano music where, because of the nature of the instrument, it was difficult for the composer to achieve the continuity he wanted. The solution to this was the concept of arborescences first used in *Evryali*. In Xenakis's sketches of this piece, a high C# is included which is beyond the range of the piano. A full adaptation of arborescences into the traditional notation may not always be literal and performers who attempt to give their full attention to the detailed notation of Xenakis's scores face practical

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[344] Email correspondence with James Wood (November, 2005). See also the interview with Françoise Xenakis at the end of the thesis where she says that Xenakis was anxious of the people's reaction when there was a premiere. Likewise at the premiere of *Gmeeoorh*, Xenakis was surprised that there was no a negative reaction at the Bonn Xenakis Festival. Varga, *Conversations with Xenakis*, 46.

[345] Irvne Arditti, 'Reflections on Performing Xenakis's String Music' *Contemporary Music Review* 21, no. 2-3 (2002): 87. Email correspondence with Linda Hirst (October, 2005).

[346] Email correspondence with Irvine Arditti (December, 2005).

[347] John Butt, *Playing with history* (Cambridge: Cambridge University Press, 2002) 121. The author mentions the case of Bartók who used to disregard his own detailed notation while playing it.

difficulties. In such cases, 'the performer is [...] required to engage the larger sonic picture adequately enough so as to give the ''impression'' that everything in the score is being played.'[348]

Concerning vocal performance, similar issues arise regarding the written notation and its realisation. Furthermore, the rendition of the ancient text that Xenakis very often uses (intonation and pronunciation) is a further cause of worry for performers. Christine Prost encountered this problem conducting the *Oresteia.*

> If we sing in ancient Greek it means that we are faced with the difficulty: to pursue a phonetic alphabet because of the common ignorance of the Greek alphabet, not only the accurate pronunciation of the phonemes but also the internal motion of the word, the motion of the flow in phrase [...] This allows us at the same time to assign to the verb a powerful expression resulting from the musical impact of the word and not from its meaning.[349]

Additionally, the glissando technique proves to be another consideration in Xenakis's vocal music when it comes to performance. Varga comments that although *Cendrées* is one of Xenakis's most beautiful compositions through the special effect of very short glissandi that the chorus sometimes sings, the soloists sometimes make those glissandos sound comical, with a barking sound effect, which according to the composer is due to an imperfect performance.[350] Varga does not specify, though, whether he is talking about a live performance or a recording. In Michel Tabachnik's recording, for instance, the short glissandi that pervade the whole piece preserve a sense of idiomatic writing, both dramatic and complex. Interestingly the same comment has been made of *N'shima* by Linda Hirst, who although a devotee of contemporary vocal music is not convinced by composers' eccentricities when it comes to vocal writing.

> [...] some composers do find the very limits of vocal possibility to be precisely the most interesting field in which to work. Xenakis's *N'shima* uses female voices in an aggressive vocal duet, in which the sound-quality he wants requires the singers to accent the note by beginning the attack from below it with a fierce glottal stop and concluded with an upward glissando. The

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[348] Marc Couroux 'Evryali and the Exploding of the Interface', 57.
[349] Christine Prost, 'On Oresteia' in *A Homage to Iannis Xenakis*, 65.
[350] Varga, *Conversations*, 105-106.

> resulting sound is close to a bark, and its extreme nature (in vocal terms) places it close to the composer's instrumental works.[351]

It is true that Xenakis's phonemic compositions bear the imprint of his instrumental sound and like other modernist composers he re-evaluated and re-created techniques and sounds which were not too far away from what Hirst calls 'extreme nature'. On the score of *N'shima*, Xenakis writes: 'The voices are "peasant-like", warm, full throated, open, round and homogeneous.' However, his interpretive indications do not correspond to what the piece actually requires from the singer. In the end, we are tempted to ask: is the final result of *N'shima* aggressive and 'close to a bark' as Hirst states? There are indeed moments that such an impression is enhanced. For instance, when the voice starts with a triple forte (Example 4.2, second system) or when the same dynamics in the vocal part is followed by triple forte in the brass line. In those cases, the voice resembles a cry. In bar 144, the singers abandon chromaticism and the way the two voices are conversing fits Hirst's description (Example 4.3). The rhythmical pulse throughout the piece is an additional feature to that effect. Xenakis certainly expands the conventional techniques to a certain extent. The singer needs to abandon 'normality' and conceive of ways to accent the notes in a very particular way as we saw in the previous chapter. The resulting sound cannot be a 'warm' voice as Xenakis indicates, but an aggressive one. On the whole, the technical difficulties in his vocal works are not as formidable as in his instrumental compositions. Xenakis was not interested in exploring extreme vocal techniques *per se* and therefore, his vocal works are more accessible than his piano or string music for instance.

It is interesting that despite the technical eccentricities in Xenakis's scores, performers do not hesitate even to exalt the impossible when they interpret his music. Chojnacka's words are quite revealing: 'Xenakis wrote difficult music, aggressive music, but it's music I like a lot and believe in, and I try to share my musical pleasure with the audience even if I suffer when

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[351] Linda Hirst and David Wright 'Contemporary vocal techniques' in *The Cambridge Companion to Singing*, ed. John Potter (Cambridge: Cambridge University Press, 2000) 202.

playing it.'[352] This statement, hyperbolic as it might sound, is representative of the enthusiasm and dedication to Xenakis's music from his regular performers.

The collaboration with Spyros Sakkas

The voice and personality of the Greek baritone Spyros Sakkas were an undeniable source of inspiration for Xenakis. The fruits of their collaboration amount to four works for solo voice, which would probably not have been written had the two men never met. It was not of course the first time that a particular performer stimulated a composer to write music for him or her. History shows that similar relationships date back to Monteverdi and the singer Francesco Rasi[353] while perhaps the most famous and relatively recent example of such inspirational and productive collaboration is that of Berio with Cathy Berberian, the composer's personal muse for many years. A similar kind of appreciation emerges from Roland Barthes's famous essay 'The grain of the voice' where the author exemplifies Panzera's singing to denote *that* grain which makes a voice not personal but individual and which leads to the great art of song.[354]

Xenakis's long-term collaboration with the singer in question turned out to be also a long-term friendship that lasted until the death of the former. Sakkas's technical skills include a virtuosity for a high-pitched falsetto that Xenakis used extensively for the compositions he wrote for him.
Sakkas recalls:

> I met Iannis Xenakis in the late sixties at a university in Paris where he presented some of his works, his views on music, on the state, on man, on politics, issues he was talking about often in various institutions. It happened I was also there for some performances of mine and I went to see and meet him. After introducing myself I found out that he had heard me performing in the final exams of George Couroupos, a compositional student of Messiaen's class

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[352] Geoff Brown 'Fancy climbing a mountain?' *The Times* (7 October, 2005) 22.
[353] Linda Hirst and David Wright 'Alternative voices: Contemporary Vocal Techniques' in *The Cambridge Companion to Singing* ed. John Potter (Cambridge: Cambridge University Press, 2000) 192.
[354] Roland Barthes, *Image, Music, Text*, trans. Stephen Heath (London: Fontana Press, 1977) 182.

> at the Paris conservatoire.[355] Couroupos had written a very difficult song for me called *Hellenic Song*. Xenakis was impressed by both the piece and my voice [...] We were talking a lot about voice, I was expressing my views to him and I believe that what I was saying was in accordance with both his aesthetics and his mind . . .[356]

Sakkas's statement confirms Xenakis's desire to discuss with his performers more general issues arising from his music, such as the function and the role of the voice in his phonetic works, than to guide them regarding the performability of his music. Arditti, with whom Xenakis frequently worked, also describe a similar relationship whereby the composer sought to get quite close to his regular performers.[357] We should not disregard the fact that Xenakis was not a performer and therefore, he was probably lacking the advantage of an insider's knowledge concerning practical issues. Sakkas's confident assumptions and praise of his relationship with Xenakis appear to be symptomatic of the composer's collaborations with his regular performers. Wood's self-assurance is in line with Sakkas's conviction that the composer was impressed by his vocal skills: 'he adored my choir, because the singers sing straight, and use no vibrato. He hated 'cultivated singing', and loved the raw energy my singers can deliver.'[358] In his letters to Xenakis, Sakkas's admiration and trust is unconditional: 'my voice is in your hands, take good care of it with all the passion and the appreciation that its presence and timbre can inspire you. Give it the joy of a new birth.[359]'

Sakkas's basic principle of voice includes the Barthesean view that voice is the mental corollary of our physical functions, including that of thought. The singer states that Xenakis was also in favour of these ideas, giving particular emphasis to the performer's detachment from his or her own

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[355] George Couroupos (b.1942), Greek composer and mathematician. Like Xenakis, Couroupos uses clusters of sounds and he draws inspiration from Greek subjects writing a number of stage works. His ballet *Odyssey* won the international prize 'Benois de la danse' in 1996. See George Leotsakos 'George Couroupos' *Grove Music Online* ed. L.Macy (Accessed 9 October, 2004), http://www.grovemusic.com

[356] All the information and quotations provided here regarding the relationship of Spyros Sakkas with Xenakis is taken from an exclusive interview I had with the singer on Thursday 2 September 2004, in his flat in Athens. See transcript at the end of this volume.

[357] Email correspondence with Irvine Arditti (December, 2005).

[358] Email correspondence with James Wood (December, 2005).

[359] BNF: Musique: archives Xenakis.

emotional experience in order to approach the text and the score more objectively. Only in this way – he believed – can singers achieve a different interpretative style as requested for different kinds of music. However, regarding Xenakis's detachment from his own musicians Arditti, with whom the composer frequently worked with, claims that Xenakis was quite attached to his regular performers.[360] The aim of 'abstract singing' was Xenakis's perpetual request from all singers in general and for Sakkas in particular who, having been trained in the overwhelming lyricism of the *bel canto* school, needed to practice and tone down his use of some traditional mechanisms of emotional expression. As the singer remembers, it was not always easy to overcome the influence of Italian opera and sing abstractly – a problem that initially Sakkas did not acknowledge.

> **Question:** Did you ever disagree with Xenakis on the aesthetics and the interpretation of a piece?
> **Sakkas:** Never. We always agreed straight from the beginning and almost instinctively regarding the use of voice.[361]

But as the interview unfolds, returning to the same question the singer reveals:

> Sometimes I was telling Iannis that it was difficult for me, having being trained in the *bel canto* school to forget all the passion and try to expel my emotions.

However, in the same interview, the singer goes on to add that he embraced Xenakis's style (and persistent demands) unreservedly and he shared the composer's view that singing or playing without vibrato helps musicians to distance themselves from their personal feelings. But such a hypothesis is not always applicable, especially in some European folk music, for instance, where the lack of vibrato does not prevent singers from expressing their feelings. In contrast to Sakkas, Evelyn Glennie claims that Xenakis was very much in favour of the performer putting his or her emotional identity on his music, arguing that in his last composition *O-mega*, Xenakis allowed performers to choose their instruments so they can express their emotions.[362]

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[360] Email correspondence with Irvine Arditti (December, 2005).
[361] Interview with Sakkas, (2 September, 2004).
[362] Email correspondence with Evelyn Glennie (December, 2005)

Therefore, yet again, the issue of abstraction and detachment versus emotional expression is not as black-and-white as Xenakis's theoretical views might suggest.

Couroupos's *Hellenic Song* (1970), which Sakkas mentions, is a piece for solo baritone and piano. It is based on known Greek folk songs, each one with its own style. Given that from the performance of this song Xenakis had the chance to meet Sakkas and hear his voice for the first time, we may wonder to what extent the musical style of that piece may have influenced the composer's writings for solo voice. Looking at the score (Example 4.1). we notice that *Hellenic Song* is a difficult piece that gives the opportunity to the performer to demonstrate his vocal and dramatic skills. From a musical point of view, it does not seem that Xenakis's later music written for Sakkas was inspired significantly by it, although some common features may be observed. The main difference is that Couroupos asks for vibrato singing, a technique that Xenakis used to detest, as we have seen. A common element could be the sense of polyphony that is pursued in the *Hellenic Song*. According to Couroupos's notes in the preface, 'it is obvious from the score that an impression of polyphony is pursued (two and three voices). Each ''voice'' should be performed in a different level of volume using a different vocal timbre.' Xenakis, as we shall see in this chapter, conceived the same idea of polyphony in *Aïs* and *Kassandra*, but in a more interesting way, using extreme contrast of registers for Sakkas's voice (low-pitched and high-falsetto), thus making the impression of polyphony even more convincing. Considerations regarding the pronunciation of consonants and vowels exist in both composers, but we shall never know whether and in what ways Couroupos's piece inspired Xenakis for his solo works.

After his first encounter with Sakkas, Xenakis invited him after a while to sing the leading role in *Oedipus* – a production of Alexis Minotis[363] – to recite extracts from the text and also to perform some phonetics. Unfortunately, *Oedipus* never came under Minotis's direction, as the

[363] Alexis Minotis was one of the most famous Greek actors and directors.

director did not probably appreciate Xenakis's ideas regarding the performance of *Oedipus*. The composer asked for live music, lasers, performance in ancient Greek, and presentation of the text on the ground. On top of this Minotis did not think much of Xenakis's unusual music and therefore their collaboration was not a fruitful one.[364] But this first approach to Sakkas was the starting point for a successfully long-term collaboration with the composer. In exploring his multi-media works *Polytopes* in the late sixties and seventies, Xenakis renewed his invitation to Sakkas, this time for the last of this series, *Mycènes-Alpha* in 1978. The *Polytopes* series includes the *Polytopes of Montreal* (1968), *Persepolis* (1971), *Polytopes de Cluny* (1972), *Le Diatope* (1977) and finally *Mycènes Alpha*, a UPIC composition, which was premiered at Mycenae in summer 1978.

At Mycenae Sakkas was requested to recite, various ancient Greek texts, with a Mycenaean pronunciation, while other activities, musical or other, were taking place at the same time. The singer recalls that he spent many days with Xenakis to practice and learn this kind of pronunciation, which was also used for his later works. The recitation of those texts invited a comparison with the *sprechgesang* technique in terms of vocal delivery, whose style could have also been close to the natural rhythm of ancient Greek prosody. Mycenaean Greek (15-13c B.C.), commonly known as 'Linear B', is the earliest written monument and the most primitive of the ancient Greek languages, preceding that of Aeolian, Ionian, and Attic dialects.[365] Although we cannot be definite regarding its sound, it could be that Mycenaean Greek represented a harsher version in comparison with the later dialects. Xenakis was interested in reproducing this particular, 'harsh' pronunciation with the assistance of international linguistics as *Polytope de Mycènes* was premiered at Mycenae. There are different theories and systems concerning the ancient Greek pronunciation. The most common one is the Erasmian used in Western schools and Universities and which is different from the pronunciation used by modern Greeks. Both of them must

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[364] Interview with Sakkas, (2 September, 2004).
[365] For more information on Mycenaean Greek see John Chadwick, *The Decipherment of Linear B* (Cambridge: Cambridge University Press, 1970) and M. Ventris & J. Chadwick, *Documents in Mycenaean Greek* (London: Cambridge University Press, 1973).

be inaccurate to a certain extent, as ancient Greek language was a tonal language like modern Chinese. Neither the Erasmian nor the modern Greek pronunciation tries to revive this essential aspect of long and short sounds. We would guess that what Xenakis attempted to do here with Sakkas must have been also an approximate version of the ancient sound. Despite the fact that he might have come up with a version that could be considerably different from the original one, Xenakis was probably not much concerned whether the final outcome was scientifically accurate. We should not forget that his mathematical calculations provide us with an aesthetic, not a mathematical result, which sometimes stemmed from a relaxed application of the mathematical models. It is therefore evident that Xenakis was interested in exploring and experimenting with a possible reconstruction of this archaic version of proto-Greek. This is reaffirmed in his own research on the rhythm of the Greek prosody, which challenged him as a music researcher.

Works for solo voice

Aïs and *Kassandra* revolve around the subject of death. *Nekuïa* (1981), for mixed choir, also deals with the same subject, but it is not a successive composition to *Aïs* as Varga claims.[366] The latter and *La Déesse Athéna* were added to the *Oresteia* trilogy after Xenakis revised and reduced the original music of the Michigan performance, selecting only the most inspiring passages for him. Hence, he produced a musical synopsis of forty minutes' duration, which almost twenty years later he wished to extend (under the same title), offering a self-contained dramatic piece, one of Xenakis's most salient compositions. The composer never clarified why he opted for these particular additions of Cassandra and the goddess Athena, instead of writing music for a more important role, such as that of Orestes. Sakkas states:

> The choice of Cassandra among the other roles from that particular play was of course the composer's personal decision. Xenakis was not interested in the

[366] Varga, *Conversations*, 166.

> contemporary sense of theatre, but in its ritualistic aspect, like in ancient Greece where the quest was both ritual and spiritual. Thus from this point of view Cassandra's role inspired him more than any other role. The same applies to the later addition of goddess Athena. Both roles led him towards an abstraction of feelings and therefore to something ritual.[367]

Sakkas is partially right. He offers a plausible explanation concerning Xenakis's engagement with the classical world. The ritualistic aspect of the Greek theatre may have been one of the considerations, which guided him to write music for ancient plays. This view is also supported by Xenakis's favouring of Wagner's music-dramas and his claim that nineteenth-century Italian opera is uninteresting, dull, and too naturalistic,[368] although he does not refer to specific examples to explain this statement. Xenakis may not have been particularly excited about the actual music of Wagner, but we should not disregard the fact that the German composer was also inspired by the ideals and ritualism of the Greek tragedy, which imbued his own operas. Hence, it is quite clear that Xenakis's vocal music takes its departure from the dramatic impetus and narrativity through *actions*, not words, of the Greek theatre. The choice of Cassandra among the other prominent roles from the *Oresteia*, such as Orestes or Clytemnestra serves this expectation. Being a prophetess, Cassandra has already the dramatic advantage of a complex character and although she does not have a leading role in the play, her tragic presence must have inspired Xenakis to broaden his dramaturgy.

However, the choice of goddess Athena may not support equally Sakkas's argument as regards the ritual aspect. Despite the fact that her role is quite decisive concerning the resolution of the drama, she only gets minimal attention from Aeschylus, at the end of the play and without any dramatic contribution over the course of it. However, we could claim that since neither Cassandra nor goddess Athena were human beings in the strictest sense of the word – Cassandra especially was a very peculiar creature as we shall see at length later on and the goddess Athena had a double gender nature by necessity[369] – they were representing something beyond the

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[367] Interview with Sakkas, (2 September, 2004).
[368] Varga, *Conversations*, 60.
[369] According to Greek mythology, Athena was born out of Zeus' head and for this reason she may have some androgynous characteristics.

human element; this fiction world must have certainly provided Xenakis with a more interesting basis to think and write about vocality.

Aïs: a requiem of emotions

Aïs – the domain of the dead, Hades of the shadows as Xenakis writes at the preface of the score – was the composer's first work for solo voice and the first piece written for Sakkas. It was commissioned by the Bayerischen Rundfunk of Munich and premiered on February 13, 1981. As stated, this piece is about the concept of death. Here, the composer selects four fragments from ancient Greek literature, which treat the subject of death. These short passages include Homer's verses from the *Odyssey* and *Iliad* and also a fragment of Sappho. As Xenakis indicates in the preface to the score, he takes two fragments from Ulysses' visit to the land of dead:

> a) into the pit; the blood was flowing like black clouds, and from the depths of Erebos[370] gathered the souls of the definitely dead. (Odyssey, chant XI verses 36-37)
> b) To embrace the soul of my definitely dead mother. Three times I hurled myself; all my heart longed for that. But three times from my hands like a shadow or like a dream, her soul flew away; and in my heart more sharp the distress became. (Odyssey, chant XI, verses 205-208)

From the same author, he also includes a fragment from the *Iliad*, this time concerning the death of the most brave and famous soldier in ancient Greek mythology, Patroklos.

> As soon as he ceased speaking the death end covered him. The soul flew away from the limbs and went to Hades, weeping for its destiny, having abandoned force and youth. (Iliad, chant XVI, verses 855-857)

These passages are treated according to the prosodic rhythm that the composer follows. On the contrary, Sappho's poetry, which is based on a different, Aeolian accent is treated in a freer way.[371]

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[370] Erebos was a personification of Darkness and part of the underworld. It is worth noting that in ancient Greek the words 'Erebos' and 'Tartaros' had a negative meaning, denoting the place where the dead souls were gathering. The word Hades, on the other, had a more neutral meaning. In the fragments in *Aïs* both words are used.
[371] For some of the characteristics of the Aeolic dialect see Leonard Palmer, *The Greek Language*, pp. 58-62.

> To die, a longing holds me, and to see the shores of Acheron full of lotuses and dew. (Sappho, fragment 95)

The tragic subjects of death and destiny, also identically present in *Kassandra*, reveal Xenakis's dramaturgy in a requiem of emotions and desires. It has been suggested that *Aïs* could be a requiem for his mother. This view may be possible, but not a necessary parallel. As said in the introduction, Xenakis's mother died when he was a small child. Varga might make this link because in the second fragment is written 'to embrace the soul of my dead mother'.[372] Like many composers Xenakis was not very keen to reveal the inherent symbolisms of his works. In relation to this particular piece, Sakkas vividly recalls that the composer would steadily avoid telling him what exactly he wished to express with it, a denial that the performer views sympathetically.

> Every time I asked Iannis about this piece, he would avoid my question somehow. You see, when you explain the origins of something, then you bring it to your everyday vocabulary and it eventually loses its significance. He wanted his listeners to pose questions themselves and then try to answer them.[373]

The fragments in question communicate contradictory feelings concerning the experience or the expectation of death. In the passages from the *Odyssey* and *Iliad*, the encountering of death creates negative feelings of distress and misfortune. It also expresses the 'irreversibility of death' as Xenakis suggests on the score. Sappho, on the other hand, seems to have in this particular fragment a radically different view on the same matter.[374] She points out her desire to die, providing us with an appealing aspect of Hades; a place 'full of lotuses and dew'. This is a celebration of the underground world, not a rare attitude concerning afterlife in ancient Greek culture, where sometimes death was faced with neither fear nor anxiety.[375]

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[372] Varga, *Conversations,* 162.

[373] Interview with Sakkas, (2 September, 2004).

[374] Sappho in her fragment 55 writes in relation to the subject of death: 'After death you will be forgotten and there will never be any longing for you, because you have no share of the roses of Pieria. Unseen in the house of Hades, flown from our midst, you will wander amongst the shadowy dead.' See Sarah Iles Johnston, *Restless Dead: Encounters between the Living and the Dead in Ancient Greece* (Los Angeles: University of California, 1999) 20.

[375] See Christine Sourvinou-Inwood, *'Reading' Greek Death* (Oxford: Clarendon Press, 1995).

Heraclitus, for instance, (540-475 BC) – one of Xenakis's favourite ancient philosophers – openly endorses the idea of death as a celebration of life, because through the approach of death we can see and appreciate life. Also the concept of death fits into Heraclitus's principal philosophy that 'everything is in flux' and thus death according to him should be viewed as a phenomenon, which concerns the incessant transformations in human nature and *cosmos*.[376] Xenakis might have been aware of all these ideas concerning death in ancient Greece. It is interesting that he combines these two different reactions to this and also that he adapts his music accordingly, depending on the specific dialect of each author, while as it is known, and the composer himself also acknowledges at the preface, the phonetic system used here is the *presumed* ancient one. Apart from the optimistic attitude that we can sense in Sappho's poetry, another fundamental difference with the other extracts is the reference to the word 'soul', an essential concept in ancient Greece. In the second fragment of the *Odyssey* and the one from the *Iliad*, the 'soul' or psyche flies away, denoting first its immateriality and second its departure and release from the body into the air, as the last breath of a living person.

Following the prosodic implications of Homer's language, Xenakis's music sounds transparent to the ear, resembling a version of *sprechgesang*. The first two fragments sound almost identical (Example 4.4 shows the first). The composer is concerned with providing a rhythmic solution according to the natural stress of the words when he deals with the texts. Exceptionally, after the complete statement of the first fragment, Xenakis repeats some phrases from it in order to emphasise the idea of death ('the blood was flowing like black clouds', 'Erebos', and 'dead'). It is the first and only time that Xenakis reuses material from these texts. With the other fragments there is no repetition. In the first instance, the phrases the composer isolates elucidate the central theme. For this reason, Xenakis marginalises the role of

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[376] For more information regarding Heraclitus's views on death see S. Kyriazopoulos and final years students from the philosophy department, University of Ioannina, Ministry of Culture, 183-191. (Σ.Κυριαζόπουλος και τεταρτοετών φοιτητών φιλοσοφικής σχολής πανεπιστημίου Ιωαννίνων 1971-1972: Ηράκλειτος: Μια Φροντιστηριακή Έρευνα,Υπουργείο πολιτισμού και επιστημών, 1973).

the orchestra and comes closer to the text with an intimate vocal part that reflects powerfully the words in question.

With Sapphos's poetry Xenakis's accomplishment was to create an alternative acoustic result, which diverges significantly from the previous intonation and resides in the characteristic falsetto melody that the baritone repeatedly delivers in these solo works (Example 4.5).[377] It is surely the poet's voice which illustrates another state of mind; a female voice which represents the joy of wishful thinking, of an eternal heaven. It is not Homer's dark Hades sung in a low register any more, but Sappho's utopian vision that produces an unnatural effect. In *Kassandra*, as I shall discuss later in the chapter, Xenakis adopts the same attitude towards the female voice, creating a similar effect with the contrast of the male choir and Cassandra.

The common element of death in both *Aïs* and *Kassandra* is also related to the concept of fate. In *Aïs* the idea of destiny is represented by bird cries, which are brought distinctively into the piece. Xenakis explains:

> It's a kind of petrel seagull still to be found in the Mediterranean [...] Sometimes at night they gather above their nests on the seashore or the rocks and give out cries, which sound as if children were being assassinated. I first heard them in Corsica [...] I have used something similar to these cries also because the bird has a mysterious quality in mythology and folklore – as if it were the voice of Destiny.[378]

The bird cries have a momentous function in *Aïs*. They have both a dramatic and a semantic role, which starts as a warning in the very first bars: this is a piece about death, sorrow, Hades, and false expectations. Xenakis's indication 'cri horrible' on a very high note for the baritone in bar 7 suggests instant desperation, extreme sadness, and above all fear and anxiety (Example 4.6). On this single, threatening note the composer places the whole spirit of the work. This scream does not introduce the essential idea of *Aïs* to the listener, but it narrates the most important aspect of it. In the course of the composition this moment is never repeated, but there are

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[377] In *Aïs* the falsetto starts in bar 92 when Sappho's fragment is introduced.
[378] Varga, *Conversations*, 162-163.

occasional moments of bird cries throughout it. Xenakis denies categorically any meaning attributed to these cries,[379] but it seems there is a dramatic logic related to them, which contributes to the overall character and coherence of the piece and contradicts the composer's idea for abstraction. Xenakis sets up a correlation between those sounds and the idea of death as destiny. The initial sporadic cries come to accompany the words of the first fragment both at the beginning and at the end of the passage, being part of the text and its deadly, irreversible message of the last two words (definitely dead). Similarly, the same mortal sound is heard after the end of the second fragment, which also denotes explicitly a moment in Hades. By contrast, Sappho's hopeful poetry is not affected by those sounds and thus inspires another kind of musical ethos. The bird cries are reinstated at the end of the first sentence of the last fragment, where the concept of death is introduced again ('as soon as he ceased speaking the death end covered him'). The piece follows a cyclic direction and finishes as it started: with the bird sounds to reaffirm the irreversibility of human fate, that of death.

It is interesting to note how Xenakis depicts musically those bird cries. As said, they are interpolated in the musical context of the composition and the composer's almost fixed notation of these cries makes them sound as a distinctive quotation throughout the piece. At the beginning of *Aïs* the baritone's line starts with a perfect fifth interval (f-c), which after three bars results in the unexpected and very loud pitch of high f (Example 4.6). The first bird-cry is scored to follow up that climax of horror and the instrumental passage after it. It appears as an unsophisticated yet characteristic motive whose narrative tone contrasts with the opening bars of the vocal line: we are taken from the upward perfect fifth and the staccato singing to the descending diminished fifth and the glissando flow in bar 12 (Example 4.7). Similarly, the next bird-cry that follows in the immediate bars (18-20) owes its effect to an augmented fourth glissando-based interval that will never be repeated in the succeeding bars. Xenakis might have believed that this contrast between the bird-sounds and the rest of the vocal line is necessary to denote emphatically the dialogue between the human

[379] Varga, *Conversations,* 163.

voice and the voice of fate (death). This is also evident in bars 39-44 and 65-71 where the bird-cries reappear just before and after the first and second fragment of Homer, contrasting the baritone's low-registered line and his syllabic delivery of the text with a high, falsetto-based glissando (Example 4.4, bars 34-38) As the piece concludes, we encounter again the last cries of the birds, which parallel the pattern of the diminished fourth interval that was heard at the beginning of *Aïs.* The motive's recapitulation and its minor transformations throughout the piece centralise the subject of death, lending to the figure in question a function similar to that of a Wagnerian *leitmotiv.*

What is the role of the orchestra in a vocal piece of that nature? Xenakis writes: 'The orchestra underlines or invokes the feelings, the sensations of the dead-living couple which we are and in which these feelings and sensations are fitted without any possible escape'. This statement – written on the first page of the score – is both interesting and surprising. Music that would 'underline or invoke feelings' is certainly not the norm in Xenakis's compositions. What is even more surprising is that he wishes the orchestra, not the voice, to emphasise or encourage these feelings, although the voice is the central focus in the piece. This does not mean that the vocal line escapes from the emotional weight of this piece, but alongside the singer's delivery of the text, the orchestra is expected to have both a passive role (to underline feelings) and an active one (to invoke feelings). Turning to Sappho's passage, for instance, we notice that the orchestra underlines the feelings of the singer by giving space to his voice and commenting at the end of each phrase. On the contrary, after the end of the last fragment and until the end, the role of the orchestra becomes advanced and fluid, concluding the piece in gestures by strings which introduce richness and energy. The music moves forward, replacing the thin vocal texture of the previous bars with a new instrumental context that enhances Xenakis's dramatic argument. Here the full orchestra comes to the foreground, united under a homophonic complex of a growing but unconcluding music. The ending becomes certainly a metaphor, but is it a metaphor of life or death? The music dies away unexpectedly – as happens with other compositions of Xenakis – together with the last bird-cry, the symbol of death, an

undetermined almost enigmatic ending that points at the uncertainly of life and the inevitability of death. In *Kassandra* it is the prophetesses who becomes the bird, predicting her own fatal death. From a vocal point of view, both works begin with an ambiguous utterance, which could be both the voice of destiny (*Aïs*) or the voice of fear to the idea of a forthcoming death (*Kassandra*).

Kassandra: an unmusical song

Let us now examine *Kassandra*, Xenakis's other major composition for solo voice. As stated, *Oresteia* was the first major music drama of the composer. Almost thirty years later the composer decided to extend this composition and thus added *Kassandra* for percussion and amplified baritone (also playing a twenty-string psaltery), which is now the second movement of the *Oresteia* trilogy.[380]

> I added *Kassandra* to the Suite (Oresteia) two years ago, when it was performed in Sicily at a festival called Oresteiada. It was established by Lydovico Corrao the mayor of Gibellina [...] I wrote Kassandra because Aeschylus is buried at Gela, a few kilometres away from Gibellina[381]

Looking at Xenakis's works as a whole, we notice that he never returned to rewrite or expand a previous work of his. In conversing with Varga, Xenakis explains that he avoids any strong emotional ties with older compositions as he tries to concentrate on his current work.[382] Therefore the addition of *Kassandra* and later on of *La Déesse Athena* is the unique exception to that principle. We shall never know whether Xenakis had strong emotional ties with the original music of *Oresteia*, but it is his only piece reapproached not once, but twice after more than two decades. The span of twenty years since the completion of *Oresteia* might justify the fact that *Kassandra* fits awkwardly into its musical context. This is not because it fails to capture the spirit of *Oresteia*, but because it succeeds in suggesting

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[380] The piece was written for Spyros Sakkas and the percussionist Sylvio Gualda and it was first performed on August 21 at the Gibellina festival in Sicily.
[381] Varga, *Conversations*, 192.
[382] Ibid., 69.

a strong aesthetic autonomy, emphasising its own dramatic elements. This is the reason why *Kassandra* can be both performed and analysed independently from the rest of the *Oresteia*. According to the instructions given by the composer, *Kassandra* can be performed as part of the small Suite of *Oresteia* or even independently. It should be said that the 'Cassandra scene' is also given particular prominence in the play of Aeschylus, where its lengthy monologue indicates a turning point in the plot. As Brooks points out: 'The long Cassandra scene (1035-1330), of almost three hundred lines, comes as contrast and climax to the preceding episodes and stasima. We no longer remain in the dim, ambiguous, grippingly moralistic thought-world of the chorus.'[383] Cassandra was a prophetess, sister of Pythia the most famous prophetess in Ancient Greece. Because of her astonishing beauty, she was given the charisma of prophecy by Apollo, the god of music and culture. He later, though, decided to put a curse on her sayings: nobody would ever believe Cassandra's prognostications, a fitting punishment for her refusal to submit to his sexual requests. In the scene in question, the young prophetess is already in Greece, captured by the king Agamemnon who took her with him as a mistress. She is trying in vain to explain to the men of Argos (the chorus) that she and Agamemnon will soon be murdered by his wife Clytemnestra who will seek to take revenge on her husband's long-term absence and infidelity. Because of Cassandra's curse her prophecy meets only the disbelief of the men of Argos and the completion of the tragedy is only a matter of time.

The main differences from the trilogy are principally two: a) *Kassandra* is scored for two soloists, one singer and one percussionist, while *Oresteia* is written for a mixed choir and ensemble, and b) the score of *Kassandra* is written in graphic notation. The 'song' of Cassandra, if we are allowed to use such a limited word to describe her part, stands out because it alternates remarkably from the moderate music of chorus to the excess of solo voice.

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[383] Otis Brooks, *Cosmos and Tragedy: An Essay on the Meaning of Aeschylus*, ed. Christian Kopff (Carolina: The University of North Carolina Press, 1981) 40. For a detailed description of the Cassandra episode (vv1035-1330) see D. J.Conacher *Aeschylus' Oresteia: A Literary Commentary.* (Toronto: University of Toronto Press, 1987) especially pp. 40-48.

What is really characteristic of Cassandra's 'song' is the well-known phrase 'tune out of tune' sung by the chorus to describe it. This has also been subject to extensive philological commentary that could have a direct analogue to a musical one.

> Much later in the play (1142) the Chorus call Cassandra's song α νόμος άνομος or 'tune out of tune'. This description may be applied not only to the music, but also to the content, which is the murder of Agamemnon and Cassandra as well as the banquet of Thyestes. By twice using an adjective that he nowhere else employs, Aeschylus puts the deaths of Iphigenia, Agamemnon, Cassandra, and the children of Thyestes into one category with the suggestion that they are all violations of nomos, the normal order.[384]

Brooks describes Cassandra's voice as 'divine'.[385] But surely the term is not used in the conventionally positive sense, but to denote the voice of a prophetess beyond the human level. As a result, Xenakis managed to score for a sophisticated projection of vocal material that would suit a very theatrical and talented baritone who sings both the chorus part and his own:

> 'Le monoloque de Cassandra est un moment d'une exceptionnelle tension, certainement le sommet d'émotion de l'opéra, qui est une succession de moments extraordinaire parfaitement maîtrises dans la plus grande simplicité et la plus grand qualité.'[386]

Aeschylus's concern for a textual-based performance is rightly indicated in Smethurst's book, where the author states that 'both *Noh* and large portions of Aeschylean tragedy are as much performed poetry as they are drama'.[387] Xenakis's *Kassandra* seems to have followed exactly this principle; the poetic text pre-determines the composer's musical considerations, the text becomes texture and the latter gesture as an attempt of composing out poetic diction.

> **Chorus:** Your wits are crazed and a god carries you away, and over yourself you chant a song unmusical . . . (1140-2).

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[384] Thomas J. Flemming 'The Musical Nomos in Aeschylus Oresteia' in *Classical Quarterly* 72, (1976-77): 230.
[385] Ibid., 14.
[386] Michelangelo Zurletti, *La Reppublica*, BNF: Musique, archives Xenakis
[387] Mae J Smethurst, *The Artistry of Aeschylus and Zeami: A Comparative Study of Greek Tragedy and Nô* (Princeton: Princeton University Press, 1989) 167.

Cassandra : Oh, oh, the end of the songful nightingale (1146).
Chorus: From where have you the rushing pangs of possession by a god, pangs that in vain and you shape your song of fear with the ill-omened shriek and in a piercing notes alike? From where have you the boundaries of your prophetic way that tell the evil? (1149-1155)[388].

The reference to the nightingale points immediately to a threnody song as its name means the song-bird *par excellence* that sings her mourning like a threnody.'[389] The fact that the chorus confines its remarks to Cassandra's 'musically incorrect' speech is indicative of its inability to apprehend the content of it.[390]

Meaning in *Kassandra* is perceived through 'gesture' and also through the delivery of the Greek text which imposes its own rules of a semantic prosodic enunciation:

> *Kassandra*, like *Aïs*, is based on the rhythm of the ancient text, on prosody. The baritone has an octave in the treble range which isn't much but gave me sufficient scope. The chant, the recitative, should avoid singing individual notes, it should be one continuous flow.[391]

Although this is a piece written in the last decade of Xenakis's creative life, it doesn't escape from the composer's life-long interest: to write music that would sound as a continuous flow and it is interesting to note that his view on prosodic elements of a text in relation to a 'continuous flow' is also expressed in the book *The Meters of Greek and Latin poetry*, where the authors indicate that the 'rhythm of classical Greek poetry is determined by the 'flow' (Greek ρυθμός) or succession of long and short elements'.[392]

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[388] Lloyd-Jones, *Agamemnon*, 79.
[389] Nicole Loraux, *The Mourning Voice: An Essay On Greek Tragedy* trans. Elizabeth Trapnell Rawlings (N.Y: Cornell University Press, 2002) 59.
[390] A further factor to this incomprehensibility is the fact that Cassandra was a Trojan woman and therefore, was not speaking Greek. It is indicative that the chorus says 'the stranger seems to need a clear interpreter.' (1062).
[391] Varga, *Conversations*, 190.
[392] James W. Halporn, Martin Ostwald, Thomas G. Rosenmeyer *The Meters of Greek and Latin Poetry* (Great Britain: Methuen & Co, 1963) 4.

Kassandra's music may invite comparison with the music of the traditional Japanese theatre. In the latter the instrumentation is usually simple and uncomplicated alongside a high, stylised singing in which the voice drops and rises – sometimes without using specifically musical notation – delivering both spoken drama and passages of song.[393] Likewise in *Kassandra* there is also a concern for a plain, unsophisticated instrumentation. Additionally, the use of psaltery and the bendings of the voice enhance such a reflection (Example 4.8). In Japanese theatre this elementary instrumentation was preferred in order to make singers' voices heard clearly and without being concealed by the sovereignty of noisy instruments.[394] Likewise, instead of a number of small percussion instruments, Xenakis uses a big one without overruling the proximity of the voice. The choice of psaltery is not accidental since for the composer it is again a musical marriage between East and West. As indicated on the first page of the score, the psaltery consisted of twenty strings and came originally from Java; for Xenakis it is a successful predecessor of the ancient lyre, the most important instrument in classical Greece. One fundamental difference between *Kassandra* and both *Noh* and Greek theatre concerns their actual performance. In the latter (Japanese and Greek drama), the actors wear masks which help the audience to identify the gender of a particular actor and also depict various facial expressions of either joy or sadness.[395] Sakkas recalls that the presence of Cassandra has caused some problems concerning her stage presentation. At the premiere of the piece in Sicily, the director of the performance used lots of make-up for Sakkas's face, making very big frowns. Cassandra was not moving and people could only hear a voice while the view of her physical presentation was almost vague and restricted. This was necessary first, because the performer needed to hold the text in front of him and second, he needed to be able to communicate with the other musicians.

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[393] Donald Keele, *No and Bunraku: Two Forms of Japanese Theatre* (New York: Columbia University Press, 1990) 70.
[394] Akira Tamba, 'La Technique Vocale du no et son Esthetique' *Cahiers De Musiques Traditionnelles'* 4 (1991): 10.
[395] Interview with Sakkas (2 September, 2004).

The absence of female actors in both the Greek and the Japanese drama is for Xenakis *one* reason why *Kassandra* may be associated with either the *Noh* or the *Kabuki* theatre.[396] For Pierre Boulez both the Japanese and the Greek theatre meet each other in the employment of a sacred language: 'The Greek theatre and the Japanese also provide examples of a "sacred" language in which archaisms gravely reduce, if they do not entirely abolish intelligibility.'[397] He was particularly interested in the vocal art of *Noh* theatre that for him was the peak of the Oriental art. Boulez believed that after Schoenberg's *sprechstimme* the Japanese theatre could teach us an alternative way to think about singing.

But despite the oriental associations that *Kassandra* may evoke, we should not assume that Xenakis was ever systematically interested in non-Western music systems as a source of inspiration. By the late fifties, he had already managed to digress from the established musical scene of his time with *Metastasis*. This digression was twofold: conscious rejection of serialism and disengagement from the oriental traits used by other modernist composers. Most modernist composers in the middle of the twentieth century seemed to have been concerned with new musical systems and the integration of non-Western elements in the established sonorities of Western music. Harry Partch, for instance, was one of them who used extensively Asian and African instruments in his compositions. Olivier Messiaen's zeal for unusual rhythmical relationships made him react positively to the challenge of the complexity of Oriental rhythms. Steve Reich, predominantly a 'rhythmical' minimalist composer, also explored and employed the elaborate rhythms of African music. John Cage's thinking was substantially constructed on Oriental philosophies that featured his musical

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[396] Varga, *Conversations*, 190. As stated in the second chapter, in the essay on *Oresteia* (Antiquity and Contemporary Music) Xenakis also draws attention to the Japanese *Noh* theatre.

[397] Pierre Boulez, *Orientations* (London: Faber &Faber, 1986), 181. See also pp. 334, 423, 449. It is interesting to note that Trevor Wishart was also attracted to the vocalization of the Japanese puppet-theatre *Bunraku*. He even used Japanese based sounds for his vocal composition the VOX cycle. See more in 'Music and Text', *Contemporary Music Review* 5 (1989), ed. Paul Driver and Rubert Christiansen.

theories and compositions. Béla Bartók was also unsympathetic to the Germanic musical heritage and although he was not as 'exotic' as other composers regarding his compositional interests, he did seek to reconcile Western and non-Western idioms in his own compositions. For Xenakis the 'liberation' from the conventional possibilities of contemporary music of his time was his own scientific non-musical background. While some of his colleagues were interested in borrowing elements from other musical cultures as an agent for a stylistic openness, Xenakis preferred to write music with mechanisms other than musical. Therefore he did not get involved in this cross-culture context, but he was interested in the experience of difference that Japanese drama and culture could offer.

Bohor, an eight-channel tape work that Xenakis wrote in 1962,[398] was an isolated symptom of his trip to Japan the previous year. He visited Kyoto in 1961 and while being there he had the chance to hear Japanese music and to visit the *Noh* theatre where he saw and heard *Gagaku*. The latter is Japanese court music and dance rarely performed even in Japan. It is said to be the oldest Japanese performing arts. The word is a combine one from 'ga' elegant and 'gaku' music. So the literally translation is 'elegant music'. In this music, sound and gesture are equally important considerations for the final outcome.[399] He used instruments originating in Eastern countries, such as the *Khen*, and together with the music he wrote for Enrico Fulchignoni's film *Orient-Occident* (1957), Xenakis showed his flexibility as a composer and also that he was not completely untouched from the 'oriental cult' of his time. However, his interest in and use of oriental elements was certainly limited.[400] For Xenakis, the oriental fascination was a parallel paradigm to the ancient Greek one. 'It was as though Japan gave him a special insight, a living experience of the ancient Greek theatre', writes Matossian.[401] He was enraptured by traditional Japanese music and he 'couldn't understand why

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[398] This piece was Xenakis's first large-scale electroacoustic composition of 23 minutes duration dedicated to Pierre Scherchen.
[399] Varga, *Conversations*, 39. See Masataro Togi, *Gagaku* , trans. Don Kenny (New York & Tokyo: Weatherhill, 1971).
[400] It was in 1985 when Xenakis composed *Nyûyô* for four Japanese instruments (shakuhachi, sangen and two kotos).
[401] Matossian, *Xenakis*, 147.

young Japanese composers were writing tonal or serial music.' [402] It must have been the dramatic context of the Japanese theatre that appealed to Xenakis more than anything else.

La Déesse Athéna: artistic weakness ?

La Déesse Athéna (The goddess Athena)[403] for baritone and eleven musicians was one of the last vocal pieces Xenakis composed in general and the last one for Sakkas's voice in particular.[404] It was also the last insertion he composed to the *Oresteia* trilogy, including his most recent addition of *Kassandra* in 1987. The piece in question was a commission by the Greek National Radio for the 70th birthday of the composer and it was premiered in Athens on 3 May, 1992 under the direction of Michael Tabachnik. With this addition, Xenakis creates a balanced scheme between choir and solo singing in *Oresteia*. The song of Cassandra comes at the heart of the first movement of *Agamemnon*, to be followed by the fully choral movement of *Choephores* and the last movement of *Eumenides*, which is also divided by the solo monologue of Athena (choir-solo-choir, choir, choir-solo-choir). The latter is inserted after bar 206 and includes the whole monologue (verses 682-708) of Athena from *Eumenides*. Xenakis added the speech of the goddess just before the transformation of Erinyes to Eumenides. This moment of change is the most important one in the last part of the Aeschylus's trilogy, and Athena's monologue plays a major role in this transformation, leading to a turning point. It seems that the solo insertions are perfectly adapted to the initial structure of the piece without compromising its unity. Also, the fact that these additions bear some common features, such as a strong sense of rhythm through the use of percussion and the baritone's 'pseudo-singing' in a high register, asserts a similar approach regarding these insertions.

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[402] Varga, *Conversations*, 39.

[403] Athena was the goddess of wisdom, justice, and war. She was one of the most famous gods in Greek mythology.

[404] Although the piece was premiered by Sakkas, the first recording was done by the baritone Philip Larson, who has also sung *Aïs* among other contemporary music of Takemitsu and Cage. Larson interpretation of *Aïs* is not exactly the same with that of Sakkas. The most important difference is that he fails to deliver convincingly the initial scream (cri horrible) at the beginning of the piece as Xenakis requests.

However, for many critics this musical 'pastiche' was *Oresteia's* weakness. The Greek press was particularly critical, among other disapproving comments, regarding the music of *Oresteia* as a whole.[405] Although there is a balance between the solo and the choir passages, the listener might have the feeling that the principal sounds converge from two incompatible sources: the choir's music and the baritone's two separate additions. This makes the music work on different levels that may restrain its full acceptance. In addition to this context, we should note that the score of *La Déesse Athéna* is notably different from the rest of the composition, including the earlier addition *Kassandra,* with regard to its microtonal singing and glissando sound. This is an important digression from the overall style of *Oresteia* despite the fact that Xenakis preserves both a similar instrumentation and the baritone's fluency to sing almost simultaneously in two registers. Thus although the composer retains some of the basic features he substitutes in a way the microtonal notation and singing with conventional writing and the glissando principle with focal pitches, which lack the linear impulse we get both before and after the addition of the goddess Athena. From this point of view the piece in question, written almost thirty years after the first version of *Oresteia* and five years after the first insertion of *Kassandra*, may seem to resist stylistic consistency in the context of *Oresteia*. Could it be an additional dimension of preference or is it *Oresteia's* artistic weakness? It would not be easy to argue confidently in favour of either view. Perhaps, *La Déesse Athéna* is not as attractive or inspired as the remaining music of *Oresteia*; however, it should be seen as part of Xenakis's musical account. Although Athena's role lacks Cassandra's ritualism, her presence in the fourth episode in *Eumenides* is not musically less important than that of the prophetess's scene. Conacher writes that 'Athena's return would itself have a significant spectacular and aural effect, as she leads in her chosen band of Aeropagites calling on the Etruscan trumpet to sound and the herald to marshal the

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[405] All the information and the reviews presented here are from the press archive of the Megaron Concert Hall in Athens, where the world premiere of *La Déesse Athéna* took place.

people to their places'.[406] Thus from a philological point of view both roles evoke a musical effect either with their peculiar speech (Cassandra) or with their presence (Athena).[407]

The world premiere of *La Déesse Athéna* together with the national premiere of the *Oresteia* trilogy in Athens received mixed reviews. In Aeschylus's homeland, modern Greeks were not ready to square the classical values his tragedies inspired with the modernity of Xenakis's ideas. Some critics faced what the composer himself regarded not only as a desirable, but also as a necessary reconciliation between past and future with profound scepticism and disapproval. These critics claimed that Xenakis abused his cultural heritage in the name of so-called avant-garde music, something between sound and noise, music which could only be performed with the help of state grants and the support of an international, like-minded community. Not surprisingly, the energy and the dramaturgy that Oresteia, especially *Kassandra* and *La Déesse Athéna*, draws from the presence of the percussion were conceived as an imitation of African drumming. Sakkas was viewed as the only hero in that performance for his ability to shriek for twenty minutes!

> For the role of the baritone Spyros Sakkas – although he is a world renowned artist – we have our reservations [...] in the first part he tried to reproduce Cassandra's voice, it was therefore natural and necessary for him to cause this cacophonous female singing [...] the result was a parody of the ancient text [...] and of course he made fool of himself [...] this also happened at the end of the piece when he was forced to interpret the monologue of the goddess Athena [...] it was a heroic attempt from Sakkas's side to memorise the text, but its acceptance was not a wise choice for his naturally low-registered voice [...][408]

Xenakis's music was charged with 'noise.' The comments written by the Greek press were at least embarrassing for an internationally acclaimed artist like him. Was it that some of the critics were philistines, or too conservative towards new music in general? Was it a question of respect for Aeschylus's play? It was not the first time Xenakis had scandalised the

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[406] D.J.Conacher, *Aeschylus' Oresteia,* 159.
[407] According to Greek mythology, Athena was born out of Zeus' head and for this reason she may have some androgynous characteristics.
[408] From the newspaper *Ελεύθερη ώρα*, (Free time) 5 May, 1992.

Greeks with his eccentricity and his 'disrespect' to their ancient heritage. In the eighties he planned to create another Polytopes spectacle with lasers and helicopters above and around the Acropolis, but this project was disapproved of and rejected by archaeologists who where afraid that the light and the intense noise would damage the Parthenon. The Greek press was again very censorious of Xenakis's ideas. It seems that some music critics did not have either the musical background or enough information about Xenakis's ideas and works, although those who did praise his music as explosively innovative, claimed that is evolved in the idea of re-creation through the practice of performance.[409]

The vocal writing is interesting here. As in *Pour Maurice*, as we shall see later, the baritone sings in the main at a high register, pushing his voice to its limits. There are very rapid jumps to low notes that come close to the baritone's natural register, but this may happen just for a single note and the performer is requested to alternate at conversational speed his vocal range and sustain a linear, uninterrupted, melodic flow that creates the impression of a duet (Example 4.9). The melodic continuity is crucial because Xenakis seeks a musical result close to that of a speech since he deals with Athena's monologue. For this reason, the baritone's line is often based on rhythmical patterns, which are repeated either unchanged or slightly varied throughout the piece. Thus Xenakis creates a sense of rhythmical speech that because it is based on similar figures becomes very distinctive. The composer here does not seem to rely so much on the natural stress of the words (prosody), as he used to do with previous ancient texts, but on the contrary makes the words follow the rhythm of the music, creating an unusual and idiosyncratic melodic effect. The bursts of percussion in the course of the piece form an emphatic aspect of Xenakis's rhythmic language and serve as a conclusive climax at the end of each phrase that the baritone sings. The role of the percussion is not, as happens in *Kassandra*, to underline or synchronise the voice, but to make a contrast between the subtle rhythm and the relaxed

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[409] From the newspaper *Καθημερινή*, (Daily) 3 May, 1992.

tempo of the singing with the excitement and the characteristic energy of its own parts.

Pour Maurice: abstract singing

As stated in the first chapter, the composition *Pour Maurice*[410] (for baritone and piano) was written for the 50th birthday of Xenakis's friend and music critic Maurice Fleuret. It differs from the other three works for solo baritone in its instrumentation, the use of text, and the vocal expression. *Pour Maurice* is one of the most abstract – and also one of the shortest – compositions of Xenakis in general and certainly the most abstract of his vocal works. It is also the only phonemic text written for Sakkas (on phonemes chosen by Xenakis himself) and the only one of the four solo vocal pieces that does not include percussion, only a piano part. *Pour Maurice* is an interesting piece in its own way with a very idiomatic sense of abstraction that reflects its essential character and probably the purpose of Xenakis. In similar pieces he dedicated to other people, such as *à.R. Hommage à Ravel* (1987) as a hommage to the French composer, *Tuorakemsu* (1990) for Takemitsu's 60th birthday, and finally *Mnamas Xapin Witoldowi Lutoslavskiemu* (1994) in memory of Lutoslawski, who died the same year, we notice that the duration of those works, including that of *Pour Maurice*, does not exceed the four minutes. Xenakis wishes to express his homage in a very precise and economical way, which is anyway typical of his entire oeuvre.

We could claim that *Pour Maurice* best defines Xenakis's long-term aim for abstraction, something that is not achieved as successfully in his previous major phonemic works like *Nuits* or *Cendrées*. The composer believes that the difficulty in injecting any kind of expression in this piece is because the baritone's vocal line is very high.[411] But this is also the case in *Kassandra, Aïs* and *La Déesse Athéna*, where the vocal line oscillates between low and high registers. However, despite the constant falsetto that the performer is

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[410] First performed on 18 October, 1982 at the Europalia Festival in Brussels.
[411] Varga, *Conversations*, 161.

expected to deliver in those works, there is a great degree of expressivity, occasionally carried to an extreme. The beauty of *Pour Maurice* lies in the fact that although there is no direct, emotional impact as in the other three works, the piece imposes its own expressive style, which is abstract but not empty. But how does Xenakis achieve here absolute abstraction? Looking at the score we notice that *Pour Maurice*, albeit a very short composition, consists of three stages. The first one lasts until the piano part becomes quite active (almost the three first systems). Until then both the voice and the piano are treated as a warming-up exercise. After this the piano enriches the harmonic palette with running passages for a few bars, until the voice takes up an animated and rhythmic style that concludes the piece. The accompaniment preamble of the piano evokes an almost post-romantic echo,[412] which could challenge the listener's expectations. Shortly after these opening moments, the voice will react to this pianistic substance and define *Pour Maurice's* abstract nature by conveying an unreflective vocal style (Example 4.10). At the beginning, and until the voice becomes active and draws our attention, this is accomplished with a succession of big leaps of a seventh, which maintain the unmediative character of the piece. When rhythm becomes relatively complex in both parts and the style changes, the music takes on a speedy, mechanical repetition of unvaried semiquavers. Therefore Xenakis's abstract aesthetics should be seen and described in the context of *Pour Maurice*: phonemic text, unreflective singing uninhibited by semantic meanings.

Looking at the pieces Xenakis wrote for Sakkas, we notice that he did not really use the talent of this singer as a baritone, but his ability to sing at a high-pitched falsetto. As regards the classical works (*Kassandra, Aïs, La Déesse Athéna*), this practice was in accordance with the way ancient Greeks were performing female roles at that time: male actors would need to play all the female characters wearing an appropriate mask. Therefore Sakkas was given these roles with the recognition that he could successfully perform a female character. Xenakis must have been fascinated by the

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[412] It seems that in all Xenakis's solo vocal works there is a brief introduction either from the percussion or in this case by the piano, which proceeds the vocal line.

singer's flair to produce such as an interestingly unnatural voice. This may be the reason why he used the same high-pitched writing even for his phonemic composition *Pour Maurice*, an abstract, neutral piece, which did not require a specific role. Sakkas's extraordinary vocal range in addition to his theatrical skills gave birth to these four solo works by inspiring Xenakis to compose music for his voice.

The late years: refinement

All Xenakis's works for solo voice were written in the last two decades of his life and they therefore fall into the category of his 'late period'. The last part of Xenakis's oeuvre is unofficially divided in to the pre- and post-1980 pieces mostly because the music he wrote in these last years sounds different. It seems that over the last two decades his music became less 'formalised'. This does not mean that he abandoned his compositional identity, but the last works are more 'relaxed' from the strict formalistic experience of the fifties and sixties. The composer himself confirms this change, but no explanation is given: 'I know that the music has changed but I don't know in what respect. I would have to be able to look at myself from the outside and that, of course, is a very difficult thing to do.'[413]

As stated in the previous chapters, Xenakis's vocal works resisted the rigorous 'formalisation' of his instrumental works even in the early years of committed experimentation with mathematical models. Thus it may not be possible to assess from a formalistic point of view the stylistic shift in his vocal compositions. But of course, apart from this consideration there are other factors which have resulted in Xenakis's refined style in the eighties and nineties. The minimal use of glissando in his latest compositions could be another demonstration of a turning point in his musical direction, although glissando was never abandoned. Some scholars have not hesitated to lend a post-modern character to Xenakis's late works, talking even of neo-classicism and quasi-tonal harmony in works such as *Jonchaies* or

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[413] Varga, *Conversations with Iannis Xenakis*, 140.

Paille in the Wind.[414] The fact that the composer did not have any new theory – apart from that of *cellular automata* – to put forward in the last two decades of his life should not necessarily be seen as a conservative shift. The theory of cellular automata was applied to Xenakis's instrumental pieces *Horos* (1986) and *Ata* (1987), both written for an orchestra of 89 musicians. By using this theory, the composer was able to create complex cluster textures and also 'to reflect upon the nature of a machine music'.[415]

Although it is true that Xenakis's late compositions lack the innovative features we experience in the previous decades, this fact itself would not be reason enough to label his late period as a postmodern phase. On the contrary, what is important is that he never broke with the idea of modernism despite the fact that there is no a faithful or perfect continuity in the course of forty years. Certainly the gap between the revolutionary *Metastasis* or *Pythoprakta* and the sextet *Plekto* (1992), for instance, is not a modest one, resembling perhaps that between *Kontakte* and *Mantra* of Stockhausen. However, it is not that Xenakis betrayed his principles regarding composition. The change in his music in the last years is neither an ideological nor an artistic regression, but a refinement of style which was the result of that personal approach to music that Xenakis took up from a very early stage.

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[414] Mihu Iliescu 'Notes on the Late-Period of Xenakis' in *Contemporary Music Review* 21, no.2-3 (2002): 139.

[415] See Peter Hoffmann 'Towards an "Automated Art" 'in *Contemporary Music Review* 21, no.2-3 (2002): 121-131 and also Xenakis's own brief description of this procedure in Varga's book pp199-200.

Conclusion

The present thesis has investigated Iannis Xenakis's vocal works, looking afresh at different aspects of this repertoire. Although the composer's commitment concerning music for the human voice was less strong than his instrumental music, writing fewer works for voice(s), compositions such as *Nuits*, *Oresteia, Cendrées,* and *Aïs* indicate major watersheds in his career.

The aim of this dissertation has been to offer an overview of the vocal compositions and to select specific pieces for detailed discussion in the context of 'cultural tradition and contemporary thought', which forms the framework of Xenakis's music. Within the term 'cultural tradition' we have encountered the deep influence of the ancient world of philosophy and drama on the composer's thought the weight of social and political thought on his music, and the effect of non-Western civilisations on his aesthetics. With the term 'contemporary thought' we have looked at the concept of Brownian motion and its implications on *Cendrées* and *N'shima* as a compositional factor and also Xenakis's own understanding, treatment, and research on Greek literature and philosophy. The notion of 'cultural tradition' was seen as a counterpart to that of 'contemporary thought' as they are both essential aspects of his art. The present study has reflected on precisely this dialectic, looking at Xenakis's vocal works and suggesting that in these compositions the idea of 'cultural tradition' overcomes to a great extent the domination of mathematics found in his instrumental works. The thesis has retained a strong interest in the cultural and aesthetic experience of Xenakis's music, which usually is conceived and understood under the aesthetics and function of mathematics, and has showed that his vocal compositions may follow a different path of interpretation. Although every work of Xenakis has a philosophical and logical thesis, as the composer himself said, mathematics and scientific logic seem to have a subsidiary importance in the works for voice.

As discussed in the first chapter, the literature on Xenakis is not yet substantial but there is a growing engagement with his music, which invites scholars from many different fields. What makes this engagement achievable is that the plurality of his topics and ideas does not cause any conflict of interests. This is because Xenakis's music *must* be understood and studied in a larger context. If his interests are left deliberately unassimilated and his music is treated selectively – without the equivalence of philosophy and science – the final result will be neither convincing nor consistent. This should certainly be a consideration for twenty-first century musicology interested in researching Xenakis's music. Scholars need to realise with their studies the diversity of Xenakis's philosophy with all its implications. Music that takes place in different schools of thought should be, if not exceptional, at least interesting enough to be studied in an inclusive context.

Xenakis's instrumental music established him as one of the prominent post-war composers. In the course of his long-term career, he remained wholeheartedly faithful to the idea of 'formalised music', but as discussed in the preceding chapter, Xenakis's musical style is purged and more refined in his last years. This change was not a symptom of a postmodernist or neo-classical regression. His initial experimental and innovative spirit was perhaps too strong to permit any stylistic transformation of that nature. Therefore, Xenakis's late period is different, but not antinomic with his earlier music. Interestingly, the vocal compositions do not follow precisely the same stylistic evolution as the instrumental ones. Looking at the span of his creative life, we notice that each decade represents a different focal point. In the sixties, there is a tangible manifestation of Xenakis's life-long excitement about the classical plays, while in the ensuing years he applied – for the first time so directly – scientific laws (Brownian motion) in compositions for voice (*Cendrées* and *N'shima*). In the eighties, the presence of the baritone Spyros Sakkas evidently influenced Xenakis's thinking and music, as regards the use of human voice, resulting in four solo vocal works which emerged in the course of a decade. Hence, with these

three distinctive stages, it seems that in each decade there is a different focus on vocal writing; however, in general, classical and phonemic settings co-exist throughout the composer's career. We therefore observe that the stylistic development in Xenakis's instrumental works is not asserted in the same way as with his vocal compositions. There is certainly more of unity, even in a variety of senses, than of development as a result of a stylistic transformation.

The seriousness of Xenakis's science never became a criterion either of artistic value or a one-way approach to the idea of progress and creativity. While most avant-garde composers thought that technology ought to be related to the major developments in the sphere of music, Xenakis advanced his music, applying various scientific theories, but not the actual technology to compose music. In this he differed from other major composers like Varèse or Stockhausen whose achievements were extensively tied to the world of technology. As a consequence, Xenakis's electroacoustic music is quite small while his vocal music escapes to an absolute degree from any technological support for the production of novel effects.

As we saw, Xenakis's vocal oeuvre excludes opera, but this does not mean that he was not interested in the spectacular. On the contrary, his concern for it was matched by an interest in Greek drama and the *Polytopes* series. Also, like Wagner, Xenakis envisioned 'the total theatre' for his classical settings, as a synthesis of the major arts. From this point of view, we can claim that he reinvigorated the idea of opera in its broadest, theatrical, sense and not that he reacted against it. On top of this, human pathos and ordinary characters did not agree with the ritual element Xenakis was looking for or with the small-scale compositions he used to favour. Also an operatic work was automatically ruled out because a *libretto* would have not been enough to fulfil his objectives. Even if his operas had evolved around a mythological subject-matter, they could not have escaped from the composer's chronic resistance to the narration of a story. Although there are some exceptions to this rule, it is apparent that Xenakis gives priority to music when it comes to text-based compositions. This consistent strategy

may even mean that the 'action' of the text (narrative) has to stop, allowing its music to dominate. With the classical texts this is accomplished by the natural rhythm of the Greek words (prosody) and with the phonemic texts by the sounds of the vowels and the combinations of consonants. In each case, the interest of the listener is diverted from the actual story to the final sound that is the musical shape of the piece. This was the primary reason why Xenakis was using dead languages, such as Greek and Latin, and also phonemic, meaningless texts. On the one hand, he produced interesting sonorities with the help of his texts and on the other hand, he attained a certain degree of abstraction. This kind of defense of classical and phonemic texts distinguishes his approach as regards vocal music and at the same time it raises the question why contemporary literature – with the sole exception of Françoise Xenakis's texts – remained unused as a source of material for his vocal works. In one of his lectures, Xenakis said he could not understand that although some people were dealing with modern mathematics, they were interested in old music (i.e. Mozart or Beethoven) and uninterested in modern music. This statement is contradictory with Xenakis's career and his extensively preoccupation with Greek literature. We know, however, that he was reading modern poetry and literature (Elytis, Kazantzakis).[416] We could claim that modern fiction was merely disregarded, rather than rejected, by the composer. His love for the classical world and art was far stronger to be replaced, even partially, by the ethos of a modern epoch. Modern thinking rests notably on the spirit of ancient civilisations and this sense of heritage was acknowledged several times by the composer in his writings.

Xenakis stood apart from his musical milieu, reflecting effectively on the marriage between art and science. In view of what he accomplished at the end as a music researcher, we could claim that Xenakis was one the most innovative composer of the twentieth century. Certainly John Cage was another protagonist in the history of modern music and his art invites a worthy comparison with Xenakis's music. He also followed a highly original and independent path, bringing into his music a greater, further dimension, that of oriental philosophy. Both men were driven by the urge to

[416] Interview with Françoise Xenakis (15 June, 2004).

find a different way of speaking and reflecting about music. [417] However, Xenakis's musical language situates his thoughts in a wider context of intellect that embraces equally ancient philosophy *and* modern mathematics. Additionally, Xenakis's professional life in science as an architect and his relatively late engagement with the art of composition credits him with an unusual distinction. Although the vocal music he wrote did not arise from the attempt to think radically about vocality and the use of text, like other composers, his approach to vocal writing was distinctive and idiosyncratic. Xenakis was never concerned with a drastic reflection on the human voice because it was never his primary consideration. Despite this, the use of ancient Greek texts from the original, the ambition to reconstruct in his own way ancient dialects, the pizzicato and glissando techniques in the vocal line, the abstract syllables through his own phonemic texts, and the application of natural theories in two of his vocal works were not established ways of writing for voice. Even if Xenakis was not planning in advance to impress or develop a sense of vocal aesthetics at the furthest extreme, his achievement in this field was personal and engaging. Whether it is derived from Aeschylus's *Oresteia,* or the political culture in the sixties, Xenakis wrote powerful music. His vocal works are more personal than his instrumental in the sense that they communicate Xenakis's thoughts on ancient drama and philosophy, a private concern that dates back to his youth, and also the trauma of his political adventures in the streets of Athens.

What remains to be emphasised about Xenakis is the fact that, no matter how complex and scientific his music might be, it has invited attention and admiration by scholars, music lovers, or even other intellectuals, like Milan Kundera, who have no prior knowledge of mathematics or any other formal scientific background. His *Musiques Formelles* has perhaps discouraged many composers who have believed this is a book on composition which reveals the secrets of Xenakis's achievements. It has also trapped those who

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[417] Unlike Xenakis, Cage welcomed and applied serialism in his early compositions as a result of his acquaintance with Schoenberg in the late forties. This was perhaps the reason why Boulez was sympathetic to Cage, despite his later distancing from serial thought, and unfavourable to Xenakis's stochastic music.

are able to comprehend its content and follow the composer's algorithmic calculations, restricting his music philosophy to the effect of mathematical models. But as discussed in chapter three, what is important in Xenakis's music is not his argument for the necessity and application of science into music, but his own sense regarding the final result of his compositions. He often departs voluntarily from the context of mathematics and becomes more concerned with the aesthetic aspects of his music. Thus the idea of Brownian motion, as pointed out earlier in the thesis, does not take over the musicality of a composition, but on the contrary the composer's concern for an engaging, musical result compromises the mathematical laws of the phenomenon in question. The use of mathematics was a productive idea for Xenakis, but never an absolute necessity.

Considering the advanced role of mathematics in Xenakis's compositions, drawing attention to fundamental theories, such as that of 'probability' or the 'group' theory, we are tempted to imagine how his music would have been welcomed or assessed if it had not been supported by all these theories. Surely, the final outcome might have been considerably different, but the question whether Xenakis's recognition and acceptance is mostly because of the unparalleled notion of stochastic music seems a plausible one. Would his music have been embraced with the same curiosity and enthusiasm had it not been constructed on a mathematical basis? We might similarly wonder whether glissando-based and microtonal writing, to the extent Xenakis used them, could have equally impressed us without the defence of inspiring mathematics. It would be hard thing if we tried to pin down precisely the relation between the system he used and the prestige his music enjoyed. On the one hand, there is the strength of an original music theory, and on the other hand, the music itself, an interesting combination between discipline and freedom or between the 'fixed' and the 'free' as Whittall writes.[418] The systems Xenakis used helped him significantly to stand out among other composers – primarily serialists – but his theories alone would not have been sufficient to establish him as a respected composer had it not been for

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[418] Arnold Whittall, *Musical Composition in the Twentieth Century* (Oxford: Oxford University Press, 1999) 291.

his idiosyncratic and imaginative style in applying these theoretical influences. His emergence as a composer of worth lies not in the conception of a different system (or a significant idea), but in its realisation into interesting art.

As we saw in the second chapter, Xenakis's professional engagement with Classical Greece started in the sixties, after experimenting for more than a decade with rigid mathematical principles, which decisively shaped his music. This proves that the initial domination of science over Xenakis's works was not uncontested or absolute, but surely an unquestionable priority at the given time. One plausible question to ask is how expected or natural this additional consideration was, from mathematics to the Greek drama. The emergence of the classical legacy in Xenakis's music is not contradictory with his previous activity as a composer. The fifties was a critical decade for the composer and greatly eventful in terms of research and experimentation. He needed to focus and advocate his thesis that new music should be founded on the premises of mathematics. With works such as *Metastasis, Pythoprakta,* and *Achorripsis* the composer obtained international recognition. After breaking with years of serial tradition, Xenakis soon opted for the cross between science and progressive music. Thus as long as he established his theories and reputation, the composer could base his repertoire on the dialectic between logic (science) and classical drama. For Xenakis this was a self-evident correlation, which extended both his musical style and his theoretical framework. What is commendable is the fact that he was equally interested and prepared to pursue research in both areas. As stated in the fourth chapter, the composer's self-exploration concerning the Greek prosody and the potential reconstruction of the Mycenaean language shows that for Xenakis the choice and consideration of classical theatre seems to have played also a major role, broadening the scope and the results of his music research.

The interaction of music and mathematics was not, of course, a twentieth-century phenomenon, but Xenakis was the first composer who investigated so consciously and in depth the possibilities of that correlation. His highly

personal method stimulated and influenced other avant-garde composers to think and/or write like him to a certain extent. On the one hand, musicians with the necessary scientific background and the advantage of advanced technological resources centered their music around similar principles and experimented with mathematical models that could open new horizons and offered unaccustomed sounds. Concerning vocal music and the treatment of text, most modernist composers worked on fragmented and deconstructed texts when wishing to pursue new vocal techniques.[419] Works based on classical plays and Greek subject-matters were not rare in the preceding century, but none of Xenakis's contemporaries could rival him for his extended and lasting research on the ancient Greek language and its drama.

Xenakis's vocal music, whether choral or soloistic, demands a high degree of virtuosity and in some cases even a special training and attention to certain features of singing. The most challenging aspects for the performers are the extensive, and in some pieces exclusive, use of microtonality in the vocal line alongside the recitation of Greek texts from the original. The non-vibrato singing was a permanent request of Xenakis who would constantly require the best possible natural and unassuming execution of the score. With the principle that the expressive weight of music belongs first and foremost to the composer, not to the singer, the objective reading of the score should be the right vehicle for any kind of communication. This objective experience of music, or better the non-subjective approach to it, was a constant request by Xenakis.

Apart from the beauty of ancient literature and the force of mathematics, considerations of social and political issues were an additional aspect in Xenakis's music. However, *Nuits* is the only piece, which seems to mirror directly the political message of freedom and democracy. However, his left-wing preferences were mostly a private concern that after the difficult post-war years was preserved at a very personal level. Xenakis never wished to communicate so explicitly his political ideas or to think of his music as the

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[419] In *Canticum Canticorum Salomonis* (1970-73) for instance, Penderecki used a Latin text, but he was concerned with the distortion of the words and the vocal timbre *per se*.

'practice' of such considerations. This is how we could understand his active political life before he embarked on composition. Xenakis's humanism was demonstrated in his early years of resistance, in his enthusiasm and study of Plato's *Republic* and Marxism, in the titles of his works, in the culture of ancient Greece, and the philosophy of non-Western civilizations. He wanted to be an ancient Greek living in the twentieth century, but at the end what was ancient and what contemporary in Xenakis? His personal simplicity to the limits of asceticism resembled a Spartan way of life, not of course the philistine aspect of it, but that of self-discipline and self-control.[420] When it comes to music this reconciliation is also very apparent. With the classical plays, as we have seen, Xenakis relives the ecumenical character of ancient thought and translates his own conception of it into sounds. Ivan Hewett writes that: 'Listening to the music of Iannis Xenakis [...] is like being flung back into some fierce atavistic world before culture existed'.[421] The spirit of ancient Greece crosses the path to the twentieth century, embracing contemporary science and technology in favour of music.

Xenakis's vocal music co-exists with a deep sense of Hellenism and humanism. It is determined above all by a sense of dramatic power that serves the music and not the text – whose function is to create abstract singing rather than narrate a story. The titles *Polla ta Dhina* which are the first words from the choral ode of Sophocles's *Antigone* ('Many are the wonders and none is more wonderful than man') and *Nuits* (Nights) were used to indicate the dramatic truth of human existence, that of suffering and fate. In writing for the human voice, Xenakis alleviates his mathematical thinking and makes music different, more excessive. Although there are some common features between the instrumental and the vocal works which betray mostly a faithful approach to sound itself, works such as *Oresteia*, *Nuits* and *Aïs* command admiration for their emotional purity, even though

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[420] Xenakis wanted to be a Spartan and live an extremely simple life, even if this meant, working for hours in his studios without food or human contact. He was never enthusiastic or even slightly concerned of basic material things and public relationships. Interview with Françoise Xenakis.

[421] Ivan Hewett, 'Iannis Xenakis' *The Guardian*, 5 February, 2001.

this is an aspect that the composer never openly acknowledged. Understanding Xenakis's Hellenism in relation to his new ideas and style means that we need to reflect on his relationship with history. We noticed that when it comes to music history, Xenakis rejects categorically both the past and the present. When it comes to history of ideas, philosophy, and ancient civilisations, he embraces the past with respect and enthusiasm. In the first case, history becomes a burden in that it should be overcome. In the latter, history becomes an advantage in that it should be reconsidered in a new context. Xenakis never wished to reconstruct any historical objectivity. Whether he deals with ancient drama or modern mathematics, the musical result does not seek any scientific accuracy, but instead becomes his very personal account in search of universality.

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Appendix 1

Interview with Spyros Sakkas

Athens, Thursday 2 September 2004

• Mr. Sakkas when and how did you meet Xenakis?

I met Iannis Xenakis in the late sixties at a university in Paris where he presented some of his works, his views on music, on the state, on man, on politics — issues he was talking about often in various institutions. It happened I was also there for some performances of mine and I went to see and meet him. After introducing myself I found out that he had heard me performing in the final exams of George Couroupos, a compositional student of Messiaen's class at the Paris Conservatoire. Couroupos had written a very difficult song for me called *Hellenic Song*. Xenakis was impressed by both the piece and my voice. It seemed that he remembered me and I took the opportunity to introduce myself further. After some time Xenakis contacted me saying that he wanted to take part as a coryfaeus in Minotis's *Oresteia* – or maybe it was Oedipus, I can't remember which one – and to perform various phonemic texts. However, Xenakis's collaboration with Minotis ended soon because Minotis panicked when he realized Xenakis's plans regarding the performances. Xenakis asked for live music and the texts to be performed in ancient Greek, using lasers and projecting texts on the ground of the stage. All this was unfamiliar for Minotis who did not think much of Xenakis's music. I assume that he could not understand Xenakis and *vice versa*, therefore the performance never came into being.

Now, I don't know whether Xenakis went ahead to write music because he was busy with other things, but I presume that he would have gone ahead with it had he received another commission to do it. Shortly after the junta was over he returned to Greece to present his big project *Polytopes* and he immediately invited me to perform with an ancient, Mycenean pronunciation on which we worked together for many days while Iannis explained to me the various texts related to Mycenae. It took place under Agamemnon's palace and in other areas close to where we worked there,

where lots of things were going on, music, theatre, etc; and during all the happenings I kept reciting texts from the ancient Greek drama which I was given by Xenakis. It was a lovely experience because the technique we used to pronounce the text resembled the *Sprechgesang* technique, with a chant-like quality, which was after all the characteristic sound of ancient Greek. It was necessary for me to learn how to pronounce the long and the short accents and the bendings of the voice in ancient Greek. We also retained the use of ancient Greek in this manner in other works that Xenakis subsequently composed for me, such as *Aïs*, for example. This is how I met Iannis.

- Why do you think he was attracted to your voice?

I do not know how he was feeling listening to my singing. He was saying that I sing like a nightingale. I think he was not only attracted to my voice but also to my thought. We should not forget that Iannis was a person who would justify and ponder on things. We were talking a lot about my voice, I was expressing my views to him and I believe that what I was saying was in accordance with both his aesthetics and his mind. Thus when I was reciting the Mycenean texts he was perhaps feeling or thinking that I was singing the most beautiful aria in the world.

- Did you ever disagree with Xenakis on the aesthetics and the interpretation of a piece?

Never. We always agreed straight from the beginning and almost instinctively regarding the use of voice. And I shall attempt to define this. The voice is the corollary of all the physical operations and whenever I expressed my views on this Xenakis would listen to me carefully and enthusiastically. He was very impressed and we would agree because he had conducted his own research and he was familiar with all these things. The voice is a result of our physical and mental abilities. Xenakis agreed with

this completely, and so we never disagreed. Sometimes he would correct me as I was singing, asking me to expert my own personal thoughts and emotions in order to keep the voice 'free' and with an independent colouring and ethos. Xenakis believed that the performer should distance himself from his own emotional state of Aeschylus, for instance. This is when he felt he should interfere. For example, he used to tell me 'here it is a bit too much' and the like. Sometimes I could do it, some others not, but we never had major disagreements.

Xenakis never had a fixed an aesthetic formula in his mind because as we understand, aesthetics is the result of a functional necessity. To build a place in a particular manner means we fulfill some of our needs. If something is not functional is not true, it is fake. Aesthetics in Xenakis's case would be his absolute need through his own personal, cultural background, his personal physical and intellectual necessities to translate into sound his experiences. And what happened with certainly was that his body attempted to contact the bodies of the ancient Greeks. I am a bit poetic but his was a source of inspiration for Xenakis. Whenever work he attempted to make was inspired by ideas and mathematical models though his own research. His compositions were a statement of his life experience. Therefore if we can call this aesthetics, then it is the aesthetics of Xenakis, but I would say again that this was not something concrete but his own soul. When he was seeking his force in the ancient Greek civilization we should understand that he would cancel anything related to the present in his everyday life and he would try to overcome it.

• Mrs. Xenakis said to me that sometimes he would insist if you claimed that you couldn't sing something.

Yes, that's true. Sometimes I was telling Iannis that it was difficult for me, having being trained in the *bel canto* school, to forget all the passion and try to expel my emotions. But he was not the only one asking this, Hadjidakis, for instance, would ask the voice to be free from any kind of style. I would

agree with all these, but sometimes I was not able to achieve it. Thus Xenakis would insist, saying 'I know that you can do it'. He was always very positive about my abilities and the skills of other musicians as well.

• Xenakis always asks for a non-vibrato performance. Why do you think he was so consistent?

This question is related to my previous comments. The indication 'without vibrato' means that we should put aside our personal emotions or what we have learned in music schools and let the sound be as primitive as possible – a sound that is not reserved but it has a distinct ethos and sonic consistency so that the vowel, the resulting sound, would not be different. This may make the listener go away, because listeners too have their own world which could be in accordance at a particular moment with things that someone else might tell them and make them agree. Xenakis did not want this, but on the contrary he wanted to carry listeners away from their everyday life. If we want to interpret Xenakis's music appropriately, we should study and dedicate to ourselves to his music. And any intellectual approach reflected in the body has to be obvious. I should attempt the same with the music of Schubert or Hadjidakis, or Verdi and Mozart. The singer ought to stay away from anything familiar, whether it is style or a particular era.

• In reviewing Xenakis's vocal music what comments have you got to make? Is it very similar?

Aïs, which was composed in 1981 for instance, is a diverse work and it has elements already known in *Metastasis*, such as glissandi and the mathematical thinking of Xenakis. Both mathematics and his literal knowledge are aspects born at the moment he is searching for a subject. *Oresteia* is a particularly powerful work followed later by the phonemic works and the independent works of *Kassandra* and the goddess Athena.

With these two additions the style is changed and the listener may not be able to relate the soloist music to the choral *Oresteia*. *Kassandra* is a piece that Xenakis composed for me after meeting me. I inspired him to write the music for percussion and solo voice that he had never attempted until then. For *Aïs* we spent hours together in his studio. I believe that his kind of inspiration goes hand in hand with the performer's dexterity, which is anyway expected. *Kassandra* comes as a delirium; no matter if there is a text behind in, it is in fact a delirium. Therefore, there might be some differences with the rest of his vocal works. But regarding his solo music, it was the span f a decade that Xenakis was concerned with the solo voice.

• Can *Kassandra* be an independent work?

It certainly can. It has been performed on its own anyway. Not *La Déesse Athéna* but *Kassandra* can be an independent work. It is also a very powerful work. The initial music of *Oresteia* that was performed in Michigan was a lengthy composition. Thus Xenakis selected the most important parts from it and he got them together, creating a synopsis of the first *Oresteia*. After this he wanted to extend the original trilogy and he wrote *Kassandra*. The choice of Cassandra among other roles from that particular play was of course the composer's personal decision. Xenakis was not interested in the contemporary sense of the treatre, but in its ritualistic aspect, as in ancient Greece where the quest was both ritual and spiritual. Thus from this point of view Cassandra's role inspired him more than any other role. The same applies to the later addition of *La Déesse Athéna*. Both roles led him towards an abstraction of feelings and therefore to something ritual.

• *Kassandra* has a distinctive timbre that reminds us of the Japanese *Noh* theatre.

I have heard this before and I wouldn't agree. There might be an intercultural global relation on this planet where people feel and express themselves in the same way. But I believe that because people have had the opportunity to come in contact with other civilizations and to listen to other musics sometimes they try to make such comparisons. But *Kassandra* has nothing to do with the *Noh* theatre. The text is in ancient Greek and the music follows the prosody of it. There is a Byzantine timbre but I don't know whether Xenakis did it on purpose. We could claim that whatever follows is a kind of imitation of the ancient Greek spirit, as with the microintervals for instance. You can sense it in *Polytopes* and in *Aïs*. Perhaps this is how I perceive it because I know Byzantine music and I relate it to it. Now the bendings of the voice may remind us of the *Noh* theatre.

• What kind of clothing did you use in *Kassandra*? Did you wear a mask?

No, I never wore a mask, but we can be more adventures and give another dimension to Cassandra because she speaks or sings with a male voice. Cassandra is a creature, neither man nor woman, with its own peculiarities, as is the goddess Athena, who expresses herself in an eccentric way, unfamiliar to the human intellect and emotions. Therefore, it is not easy to present Cassandra. What happened in the world premier in Italy, and I quite liked it, was that we used a huge make-up with big brows similar to Agamemnon's mask. I remember wearing a white shirt which was lit up but not distinct from a distance. I liked this vagueness. Cassandra was still and you could only hear her voice. This was done by necessity because of lack of space. How could I learn the text by heart and be able to move on stage while communications with the rest of musicians?

• Xenakis once said that he can't see why the human voice should be treated differently from any other instrument. What's your own experience regarding this?

I think he was right. He doesn't distinguish the human voice from any other instrument. He used to believe that the human body and its intellect — because the body includes the thought — make and instrument and play it. He makes the clarinet for instance. Therefore all these are the results of our body. And this may include the voice, because human beings express so many things through the voice — either the internal voice or external, the thought, the soul, the spirit for instance. The voice is a sound, the result of a physical phenomenon. And this dimension can be transferred to other instruments. In *Aïs* there are two bars which last for four minutes where the voice plays with the oboe, similar to Morse signals. The oboe plays at a semitone's differences from the voice; it thus sounds dissonant, they join together and then they split again. In order to clarify rhythmically these comments it took me one month. Of course for the oboe player it was easier. I think that in these bars Xenakis though he had a second role.

• The work *Pour Maurice* is the least known composition from the vocal pieces. Is there anything you would like to tell me about this piece?

Xenakis wrote this piece when his friend Maurice Fleuret died*. Fleuret was an important person. He had eminent positions in the ministry of culture and he was directing how things should be done. He was also a very intelligent guy who would support research and the new artists, organizing many concerts. He was of course a fan of Xenakis. This piece is based only on phonemes and had big leaps. It is a difficult piece both for the pianist and the singer. It is a devil of a composition but very beautiful. In the festival in Cologne the audience was very enthusiastic.

• Xenakis used phonemes in most of his vocal works. Why do you think he liked them so much?

Well this is quite natural given that Iannis was a musician and he wanted through the sounds and mathematics to reveal the human intellect. He would avoid the poetic and the pseudo-poetic. For this reason he would avoid theatre for instance which is about human's problems, love stories, the fear of death. These elements cannot be found in Xenakis's art, because he thinks art is the highest point of the human intellect. He was not interested in dealing with people's everyday problems. People should seek other things through art, they shouldn't tell us the sane stories. Sound was for him the most serious example.

• *Aïs* is about death based on various ancient texts. Had Xenakis ever told you what he wanted to express through this piece?

Every time I asked Iannis about this piece, he would avoid my question somehow. You see, when you explain the origins of something, then you bring it to your everyday vocabulary and it eventually loses its significance. He wanted his listeners to pose questions themselves and then try to answer them. He never explained anything. *Aïs* means Hades. In this words there is the concept of death. Again Xenakis goes back to ancient Greece. The Greeks would deal with death without fear, they thought that death is an extension of everyday life, like the journey to Hades. The texts are from the *Odyssey* and *Iliad* and a fragment by Sappho who lauds Acherontas saying 'when finally I am going to leave from here and go to Acherontas to lie on his shores'. She speaks as if Hades were Paradise. There is no fear at all. Ulysses goes down to Hades looking for his mother's soul. He finds it, he holds it and then he loses it and so on, so forth. When Patroclos was killed in the *Iliad*, Homer says that when death comes, the soul is going away, abandoning the body. All these show clearly how familiar were the ancient Greeks with the notion of death, in contrast to our modern civilisation, where the thought of death horrifies us. The bird cries are the cries of people

in relation to death. The idea of *Aïs* came when Xenakis stayed overnight with his wife on a desert island in the Aegean sea. He was often traveling with his kayak. When he stayed on that island he heard the cries of many birds and he got inspired to write this piece. Xenakis was a lover of nature and of sea in particular where through it he could identify the human existence. Sappho's texts are sung in the central register while bird-cries have a high register. Xenakis's pitch-range is quite wide and the performer should be always ready for this challenge.

- What kind of pronunciation do you use for the ancient texts?

There is an essential difference between the pronunciation of modern Greeks and the other Europeans. The latter use the Erasmian pronunciation. Xenakis's choice was made after research and collaboration with the acclaimed linguists. He therefore used the Mycenaean pronunciation, which sounds a bit harsh. In *Kassandra* the θ is pronounced as *tch*. The Mycenaean language is rather primitive, almost barbaric in relation to the evolution of the Greek language. Thus Xenakis doesn't choose either the modern or the Erasmian pronunciation. Sometimes performers do not have the appropriate background or training to render it correctly.

- What would you have to say for the man Xenakis?

My impression of Xenakis is that he was a big child. Simple and naïve in the positive sense of the word. He was a genuine benevolent man, distancing himself from any kind of animosity. He would always laugh with my jokes. He was on friendly terms with his self. For this reason he abandoned Marxism, which could initiate hate and therefore conflict between people. But this is what precisely Xenakis wanted to avoid because he realized that he didn't want to have a negative attitude towards things. Iannis was a great believer that art should open horizons and sharpen our intellect. He wouldn't be interested in whatever makes us miserable. Instead

he would try to make it art. This, I remember, surprised me. Marxism may lead to resistance and this to revolution, to animosity and war. This is exactly what Xenakis wanted to avoid. A genius like him would find his own way to create art without being stigmatized. He therefore distanced himself from the politics to support the view the most important consideration for him was the spiritual aspect of life. This was Xenakis. A big child, a wonderful man.

Appendix 2

Interview with Françoise Xenakis

Paris, 15 June 2004.

• Madam Xenakis, thanks for accepting my invitation for the interview. As I have told you, I'm doing research on the vocal works of Iannis Xenakis and my first question will be if you think that there is a difference between his vocal and his instrumental music. Does is sound difference to you? Does it sound more emotional?

Oh yes, his vocal music is more tragic, more archaic, written by the heart. And the Greek text is very essential to Xenakis.

• But I happen to know that he didn't like it when people said his music is emotional, did he?

Well, he would say, 'I don't know why you are saying that'. But I think he knew…

• So what do you think makes the difference, the text or the voice?

Both. All together.

• Had Xenakis ever told you why he didn't like using stories? He uses only phonemes and Greek texts.

Yes, phonemes and some words because he didn't like stories. Phonemes are a universal, ancient, and emotional language. He didn't like opera either. He was asked many times to write an opera and he would always say. 'No, I don't want to set my music to words.' He uses words as musical instruments

and phonemes and onomatopoeia, but he was not interested in opera...he wrote *Oresteia* though.

• You provided phonemic texts some his works.

Yes, it was from *Ecoute*, a book of mine. He was using little phrases from there, short passages.

• But it was he who was choosing the words, not you. Did you mind that he was breaking up your texts?

Yes, it was he who was choosing the phonemes and the phrases from my book and I didn't mind when he was breaking up my words.

• Had he ever composed or dedicated a piece for you?

(laughs) Yes...I can't remember which piece, though...I had much respect for him.

• What is your favourite music Xenakis wrote?

Nuits, Oresteia, Persephassa and *Terretektorh.*

• Why these four? Is it because it's powerful music?

Yes, it's power, a terrific explosion. I also like *Cendrées.*

• What can you recall of this piece?

The first time it was performed was in Portugal. It was a terrific piece and Xenakis was anxious. It was a commission from the Gulbenkian Foundation which is a rich foundation.

• Did Xenakis ask your opinion about his music?

Yes, and I would say that 'I don't like this piece'. There is some music that I don't like, for instance, *Analogique A* and *B*. I listen to those pieces and I'm not feeling well, I'm feeling anxious. And Xenakis would say. 'Oh you have to listen again', but for me it was always the same thing.

• Would he consider changing something?

Oh no, no. Nobody would. When I write a book nobody puts a word in it.

• I wanted to ask you about Piaget's theory regarding time. What exactly did you tell Xenakis about it?

I was a psychologist for children and I had a book on Piaget that Xenakis read. The notion of time is different for children and also for various people and for different kinds of music. Time is not the same for Indian music for instance.

• Do you know if he got influenced by this theory in any way?

Perhaps, but not directly. Probably on an abstract level.

• When Xenakis was composing , did he use to have a very strict timetable?

Every day he worked in his studio for 10 to 12 hours a day. And once a year for a month he would go to the sea to swim. He was a real fish. He would also go to attend concerts.

• Did he use the piano at all?

No, never.

• Would, he listen to other types of music: jazz or pop music, for instance?

No, even if some friends invited him, he would still say no.

• What about his own music: did he use to listen to his pieces again after composing them?

Oh no, never. Even when there was a concert with his music, he would always ask the conductor, 'Is it necessary for me to come to the concert this evening?'

•Why do think he didn't want to go? Even when he was a famous composer?

Because he was nervous and anxious, he never like publicity. Even when he was a famous composer he used to say 'This time they will boo'.

• What do you remember from the American years when Xenakis was at Indianna University? How long did he stay there for?

He stayed there five years but he would travel frequently from there to here. Three months in America and one month here and then back to the States and so on. He wanted to make a studio there, but it was difficult and thus he came back. He didn't like America anyway.

•What was Xenakis's relationship with Boulez?

Boulez hated Xenakis, because he made new music and Boulez said 'No, this is not music.' He would only accept serial music: even in concerts he didn't want Xenakis's music to be played.

- What about Xenakis? What were his feelings for Boulez?

He was indifferent. He used to say that he was a good conductor. A good teacher.

- What can you recall from Xenakis's experience from Japan?

When he first went there, he said, 'I am a Japanese man.' He was very enthusiastic about it and he went to see Japanese theatre, all kinds, *Kabuki* and *Noh*. Japanese composers told him not to go to these places because they thought that Japanese theatre and music were finished but Xenakis said to them, 'You are stupid, it's wonderful music, extraordinary theatre, come with me!' And Takemitsu said, 'Maybe yes.' Xenakis wanted to see and hear a particular Japanese woman who was singing and was giving many concerts.

- Did he write letters to you from there?

Yes, he wrote letters to Mâkhi, our daughter, with his own drawings of Japanese girls.

- His piece *Kassandra* has a distinctive Japanese timbre.

Yes, there is something in the voice that is similar to Japanese singing. The way the voice moves.

- Do you think Xenakis might have been influenced by *Kabuki* theatre, for instance?

I think so. He used to love these bendings of the voices as in *Kassandra*. He also liked to Japanese and Balinese singers, but he didn't like opera singers.

• But he liked Wagner.

I think he liked the music but I'm not sure about the voice. But his big love was Brahms. He also liked Bach and Beethoven.

• He added *Kassandra* to the *Oresteia* trilogy after many years. Why do you think he wanted to come back to this piece?

When he first composed *Oresteia* he said. 'I will add another piece later.' At the beginning *Oresteia* was provisional. He wanted *Oresteia* with *Kassandra*. For him *Oresteia* was an opera.

• Xenakis wrote four pieces for Spyros Sakkas. What do you remember from this relationship?

They worked together. They were also friends. Spyros came here to work. He is a good man.

• Were there moments when Sakkas found it difficult to sing what Xenakis was suggesting?

Yes, he would say, 'Oh I cannot do this' and Xenakis would reply, 'Of course you can.'

• When Xenakis was in Berlin, he wrote to you saying he was feeling lonely there.

Yes, he was alone and ill with high temperature and he wouldn't call anybody. When I went to see him with Mâkhi he was tired. He worked a lot there but the environment was not good.

• Do you think that Xenakis was very fortunate as a person? As soon as he arrived here in Paris he met and worked with Le Corbusier.

Yes, he was very fortunate and he had the chance to relate architecture to music. It was a good start for him.

• The premiere of *Metastasis* was not an instant success. Some people didn't like the piece at all.

There were mixed reactions at the premiere of *Metastasis.* Young people loved the piece. They were very enthusiastic about it and they wanted to have pictures with Xenakis etc. It was the old people who didn't like it and left the concert hall.

• Was he sad when people didn't like his music?

No, he wasn't sad. Varèse got very enthusiastic when people booed at the premiere of *Dèserts*, he even cried then. His piece was a very big scandal.

• Was he a good friend with Xenakis?

Yes, there were very good friends.

• Xenakis said that he was an ancient Greek living in the twentieth century. What did he mean by that?

He wanted to be a Spartan. I don't know why. Probably because he was a simple man. He would only eat the very basics. He never liked luxury. I do!

• Xenakis had a traumatic experience from war, he almost died. Did those memories last for ever for him?

Yes, I think so. War was a shock for him. And he had that scar on this face for all his life.

• Did he use to read books on political topics? Which authors did he read?

Yes, he did. He used to read Marx, books about the war in Greece, Kasantzakis, Ritsos, Elytis. He knew Kasantzakis who was then in the exile and Xenakis went to see him. They met a couple of times for political reasons. Xenakis liked him, he liked his personality.

• Are there any of your books which are about your life with Xenakis?

Yes, the last one. 'Regarde, nos chemins so sont fermés.'

• Anything else you would like to say?

Xenakis was a right person. He liked justice. He was also a difficult person and sometimes as a man he was a bit stupid!

• You mean in everyday life?

Yes, for everyday things. It was impossible to go shopping with him. I would go and shop for him and come back with two or three pairs of shoes, saying, 'I have got this and that,' to make him choose. I was telling him, 'Please choose one!'

• Xenakis was a composer, an author, an engineer, a philosopher. What was he for you?

A man.

• A man?

A man.